

# Construction Methods

JULY

1946

Pre-cast concrete column units, fabricated by bolting, are transported to Navy warehouse job for erection.

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JULY 19 1946



Pulling Long Concrete Piles • Placing Light Precast Roof Units  
Building Houses for Davis Dam • Spreading Soil-Cement Mix with Bulldozer Hoppers  
Improvising Equipment for Road Maintenance  
Teaching Equipment Safety with Slide Films

✓ 17 v. 28<sup>2</sup> July - Dec. 1946  
*Pouring ingot molds  
at Inland's Indiana  
Harbor Plant.*

# New Steels

Our modern, changing world is placing new demands on steel—with particular emphasis on the high-strength, low-weight ratio; durability, uniformity and appearance. As a result, better steels, more versatile and adaptable than ever before, are being developed—some far in advance of the newer uses and improvements they eventually bring about.

Typical result of this intensive research program at Inland is "Hi-Steel" . . . solution to numerous high-strength, low-weight ratio requirements in steel construction problems. Daily, Inland metallurgists are engaged in solving current and long-range material problems of Industry. From this experience and from the continuing research program, come the greater achievements of tomorrow.

We will be glad to work with you on any problems concerning the selection or fabrication of steel.



**INLAND**  
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Inland Steel Company, 38 S. Dearborn Street, Chicago 3, Ill. Sales Offices: Cincinnati • Detroit Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul.

Principal Products: BARS • STRUCTURALS PLATES • SHEETS • STRIP • TIN PLATE PILING • REINFORCING BARS • RAILS TRACK ACCESSORIES.



# Construction Methods

A Pictorial Survey of Current Practice, Equipment and Materials

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## Cuts and Fills

CONSTRUCTION EQUIPMENT DISTRIBUTORS, though deprived of their normal market during the war and severely handicapped by current shortages, are far from licked. Evidence of their faith in future business is the numerous splendid new modern sales and service facilities being built or planned throughout the country. In this issue we describe two new distributor plants as examples of that faith. These new and improved facilities are promises to the buyers and users of equipment that the important and efficient services offered by distributors will be even better than they have been in the past.

THE BUREAU OF RECLAMATION, one of contracting's best customers, has just celebrated its 44th birthday. During its life it has spent a billion dollars in building 60 dams, 15,500 mi. of canals, and 31 hydro plants. It is now involved in a vast amount of construction, including part of the Missouri Valley development, where 105 dams are to be built, and has just announced detail plans for the Columbia Basin project, whose four dams, four tunnels, 46 siphons and 475 mi. of canals will require 83 million cu. yd. of earthwork. Happy birthday, U.S.B.R., and may the contractors serve you well for years to come.

SPEAKING OF BIRTHDAYS, hats off to the U. S. Corps of Engineers, which is celebrating its 171st anniversary. The Army Engineers jumped right into their old peacetime job after a glorious record in the War. Since V-J day, they have awarded civil works contracts totaling \$91,000,000, and have a lot more up their khaki sleeves ready to go.

DISSATISFACTION AND DISCOURAGEMENT over surplus property disposal has almost reached the stage of open revolt. No wonder, the way the program has been mishandled, changed, shifted from one agency to another and operated largely according to local official whims. The Associated Equipment Distributors suggest a remedy amending the law to eliminate all priorities for at least a year, selling in open market to highest bidders.

A. AMIRIKIAN'S article in this issue on precast concrete units for a Navy warehouse indicates what the construction industry could do if left free and unhampered by ancient codes and labor restrictions. Without these fetters, archaic building practices would disappear, resulting in faster and cheaper construction, in conservation of materials, and in increased efficiency.

JULY, 1946

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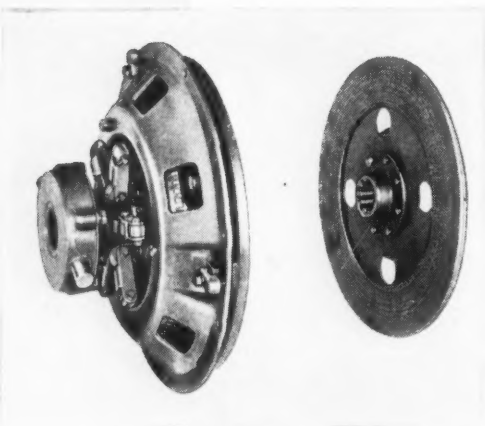
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# THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS



"Hey, Mike. Telephone!"



"Sir, I had one heck of a time getting it, but here's the crane you ordered brought up."



"So you figure we'll use less tar as we go along because the road gets smaller?"

**BREAK THE  
LOG-JAM**

# *in Housing!*



## **USE 'INCOR' FOR EARLIER COMPLETION AT LESS COST**

**R**ENTAL-HOUSING is needed in a hurry. Speed construction with 'Incor' 24-Hour Cement. 'Incor' concrete is service strong, ready to strip, in a fraction of the usual time . . . result, faster erection speed at substantially reduced cost. On Royal York Apartments, Columbus, Ohio, 'Incor' saved one complete form-set and two sets of shoring. Erection time was advanced by 1½ months, worth \$10,500 in rentals to the owner. And 'Incor' saved the contractor \$900 net, when this job was built, in 1937. At

TODAY'S peak lumber and labor costs, this 'Incor' saving would amount to at least \$2070! Plan it for maximum speed, at minimum cost . . . build it with 'Incor', America's FIRST high early strength Portland cement . . . save 40-60% on form material and make-up, cut time and overhead, get earlier completion at less cost. Write for "Cutting Concrete Costs" . . . address Lone Star Cement Corporation, 342 Madison Avenue, New York 17.

\*Reg. U. S. Pat. Off.

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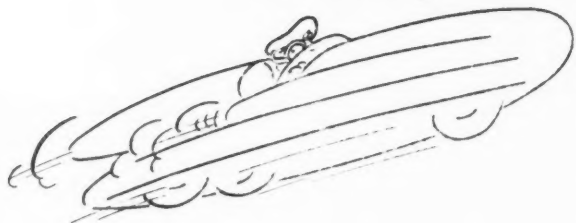


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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,300,000 BARRELS ANNUAL CAPACITY

# The *General* Has Everything . . .

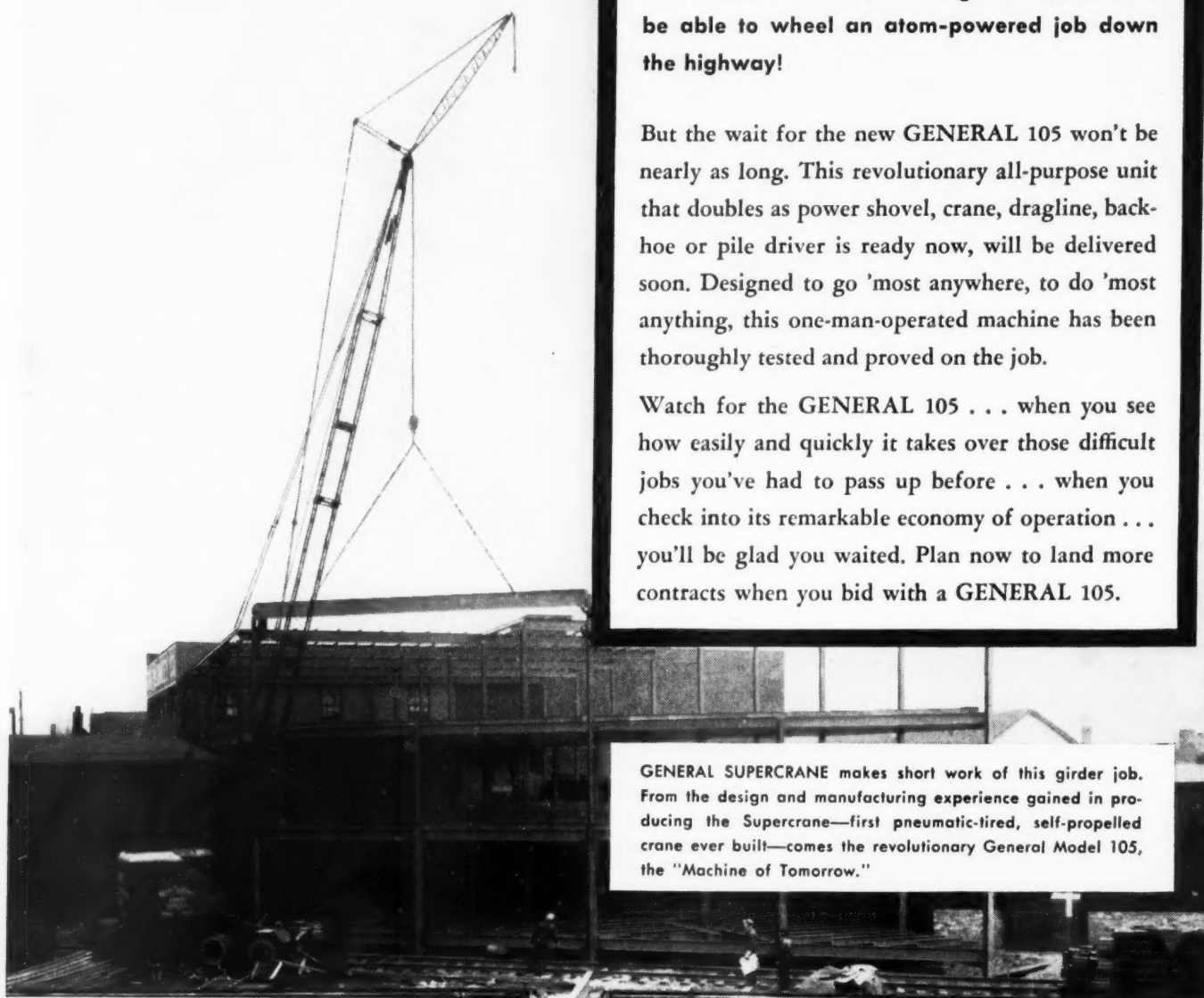
Including an Atom-Powered Automobile!



The genial old "General" is always the first to acquire these "postwar wonders" . . . a word to the artist and there's the old boy, sitting behind the wheel of an Atomic Eight! Not so easy for the rest of us . . . we'll wait a long time before we'll be able to wheel an atom-powered job down the highway!

But the wait for the new GENERAL 105 won't be nearly as long. This revolutionary all-purpose unit that doubles as power shovel, crane, dragline, backhoe or pile driver is ready now, will be delivered soon. Designed to go 'most anywhere, to do 'most anything, this one-man-operated machine has been thoroughly tested and proved on the job.

Watch for the GENERAL 105 . . . when you see how easily and quickly it takes over those difficult jobs you've had to pass up before . . . when you check into its remarkable economy of operation . . . you'll be glad you waited. Plan now to land more contracts when you bid with a GENERAL 105.



GENERAL SUPERCRAPE makes short work of this girder job. From the design and manufacturing experience gained in producing the Supercrane—first pneumatic-tired, self-propelled crane ever built—comes the revolutionary General Model 105, the "Machine of Tomorrow."

THE GENERAL 105 • ONE-MAN OPERATED • ONE-ENGINE POWERED • MOUNTED ON RUBBER  
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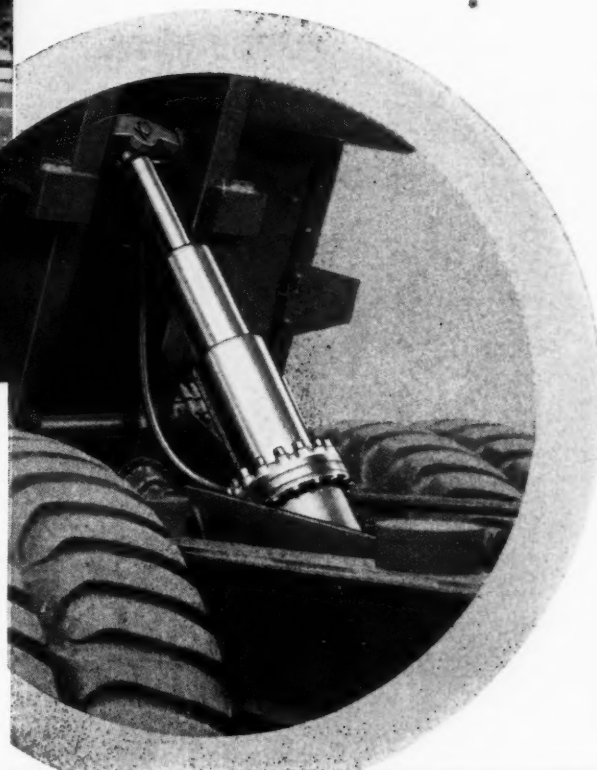
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CRANES, DRAGLINES  
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# **EUCLID** *fast-acting* **HOIST** *Speeds Dumping*



**T**HE three-stage hydraulic hoist of Rear-Dump Euclids saves time and reduces hauling costs. Of Euclid design and manufacture, the powerful hoist and its hydraulic system provide fast, dependable operation and ample capacity for the rated payloads.

Here are some of the features that make the Euclid double-acting hoist unequalled for the heavy duty service of off-the-highway work on construction projects, in open pit mines and quarries, and on industrial operations:

*Raises Loaded Body Fast . . .* Engine speed controls dumping speed; ample hoist capacity for full payload.

*Dumps the Load Clean . . .* Hoist has 37" stroke which raises body to 70° from horizontal.

*Provides Complete Control of Body . . .* Conveniently located hoist valve has four positions: raise, lower, float, and hold. All or part of the load can be dumped according to job requirements.

*Lowers Body Quickly . . .* Hoist is double-acting in third stage . . . lowers the body under power to the point where it settles quickly by gravity.

Ask your Distributor or Representative to show you how all Euclid models, Rear-Dump and Bottom-Dump, are built throughout for efficient, long life in off-the-highway service.



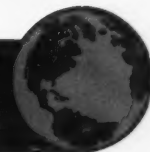
**The EUCLID ROAD MACHINERY Co.**  
CLEVELAND 17, OHIO



# **EUCLIDS**



*Move the Earth*

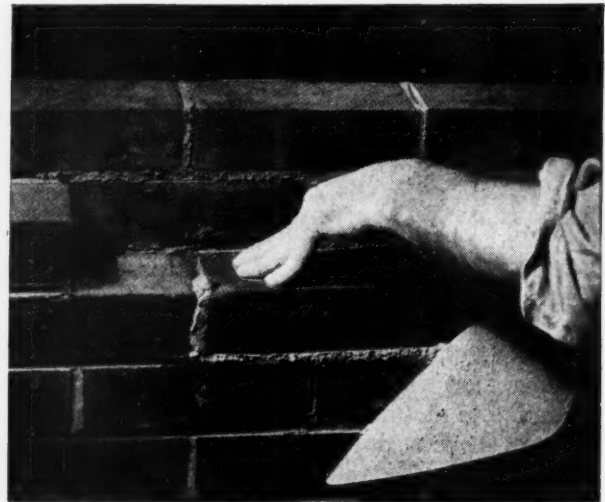


# **BRIXMENT MORTAR**

## ***Is More Plastic***



*To compare the plasticity of any two mortars, try shoving a brick into place, with a full head*



*joint. The more plastic the mortar, the easier the work. Try this with Brixment mortar!*

### **AND GOOD PLASTICITY**

### **IS THE FIRST REQUIREMENT OF GOOD MORTAR**

One of the most important characteristics any mortar can possess is *plasticity*. Within certain limits, plasticity is the greatest single factor not only in the *economy* of the brickwork, but also in its strength, its neatness, and its resistance to the passage of water.

One of the outstanding characteristics of Brixment mortar is its unusual plasticity. For twenty-five years, brick-

layers all over the United States have agreed that the workability of Brixment is comparable to that of straight lime putty. This exceptional plasticity makes it easy for the bricklayer to secure neat, economical brickwork, with the brick properly bedded, and the joints well filled. And because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand and still make an ideally workable mortar.

**LOUISVILLE CEMENT CO., Incorporated, LOUISVILLE 2, KENTUCKY**  
**CEMENT MANUFACTURERS SINCE 1830**

*A development of*  
**B.F. Goodrich**  
**FIRST IN RUBBER**



## **Built to float—and grip— this tire has greater bruise resistance**

**T**HOSE Super Traction Tires shown above solved a lot of problems for construction men building roads, dams, airports, levees—on jobs where soft dirt, sand, and loose loam are encountered. One problem was miring; tires would bog down, losing valuable time. Another problem was rocky terrain; when wheels would spin, tires might be cut by sharp rocks. Even worse, when tires hit rocks, ruts, stumps, etc., the shocking impacts led to bruises, ply separation, and blow-outs. Delays and repairs were costly.

B.F. Goodrich engineers took hold—made thorough studies—designed a new kind of tire, the Super Traction. They solved the bogging down problem with a special self-cleaning tread with extra large contact area to provide maximum flotation. The tire stays on

top—yet the heavy, scientifically placed cleats give a deep bite . . . plenty of traction. The tough rubber is compounded to wear long, resist cutting. And a special *shock shield* is built in to give greater bruise resistance.

This shock shield is a set of four breakers—layers of rubber-coated rayon cords—between the tread and the plies. These breakers are in pairs, with the cords in each pair running parallel to each other—but with each pair running in opposite directions to give balanced strength. The breakers are cushioned with thick layers of shock-resistant rubber.

Under impact, the cords in the breakers stretch together, *not* across each other, and return to their original position. The blow is *distributed* and

*absorbed* by the rubber cushions—the shock passed on to the cord body is greatly reduced.

The Super Traction and other B.F. Goodrich off-the-road tires are making big savings for users. They report longer tire wear, fewer bruises, far less ply separation, better traction. Repair bills are lower. Delays are reduced. The same savings can be *yours*. See the B.F. Goodrich dealer, or write us direct. *The B.F. Goodrich Company, Akron, Ohio.*

*Truck Tires* **BY**  
**B.F. Goodrich**



# GOOD MAGNETOS

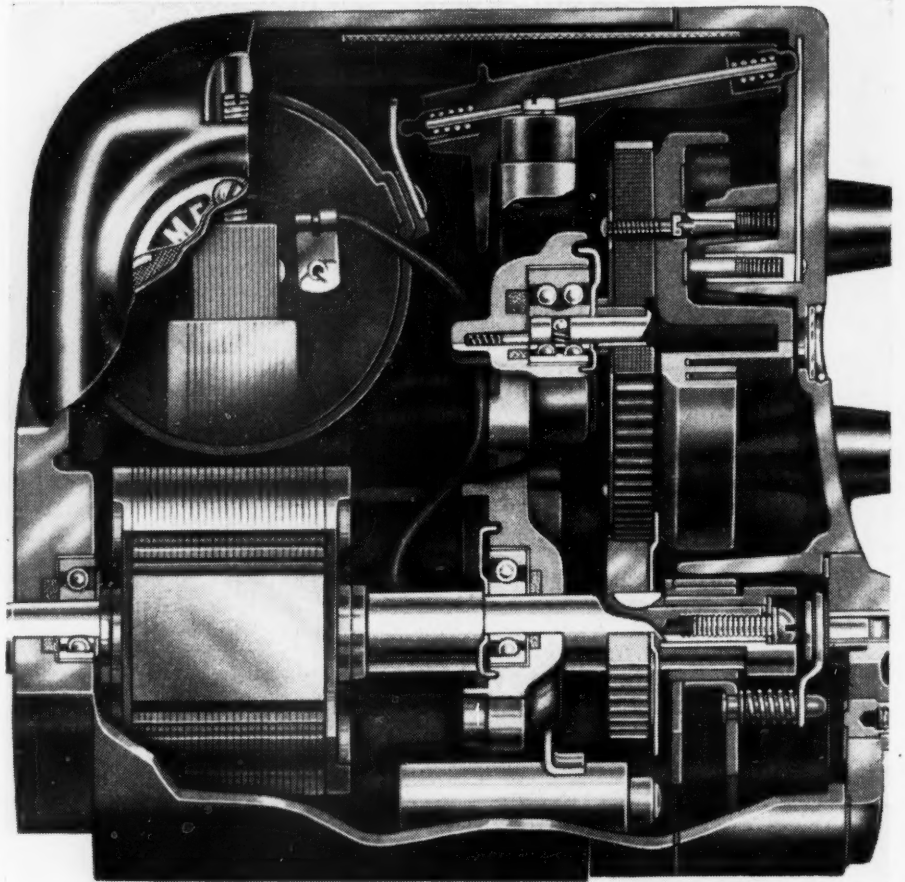
## *give Matched-Team Performance*



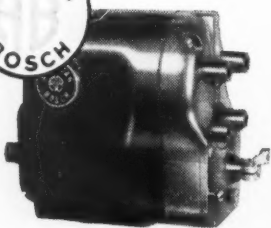
A MATCHED TEAM PULLS TOGETHER, moves the load easily, keeps going steadily for long periods without tiring—in every way equal to its task.



AMERICAN BOSCH MAGNETOS GIVE MATCHED-TEAM PERFORMANCE. All components have scientifically-balanced relationships, to deliver full power output without overloading of any part.



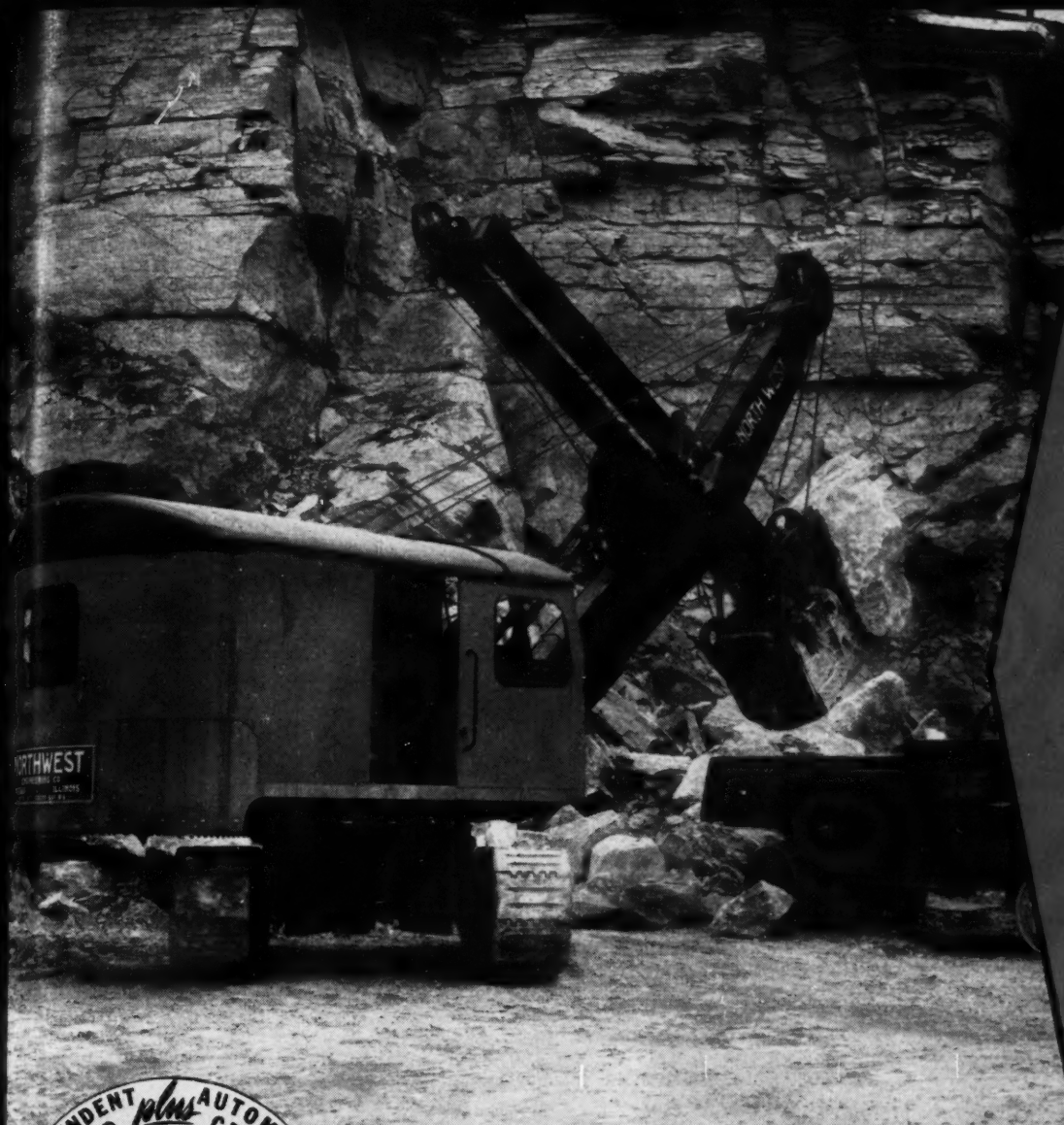
THEY PAY THEIR WAY because they are built to take the toughest assignments and stand up under heavy service. You'll find many such hidden values behind the American Bosch trademark on all types of automotive electrical equipment.



AMERICAN BOSCH CORPORATION, SPRINGFIELD 7, MASS.

# AMERICAN BOSCH

## *Super-Powered Magnetos*



The Northwest Dual Independent Crowd accomplishes everything that any other independent crowd can accomplish, but only the Northwest Dual Independent Crowd adds the force in the end of the Hoist Cable to the Crowding action! No other crowding mechanism combines the simplicity of the Northwest Independent Crowd with the additional crowding force secured by dead-ending the hoist cable onto the end of the dipper sticks.

That extra force all other shovels waste pays added dividends to a Northwest owner.

A Northwest, because of this additional crowding force, cannot only handle harder digging, but it handles more yards per hour.

This design is described in detail in "Digging Power Plus," a booklet that we will be glad to send without obligation.

**NORTHWEST ENGINEERING COMPANY**  
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**THAT  
EXTRA  
CROWDING  
FORCE  
OTHER  
SHOVELS  
WASTE —  
pays out  
in the  
TOUGH  
DIGGING!**

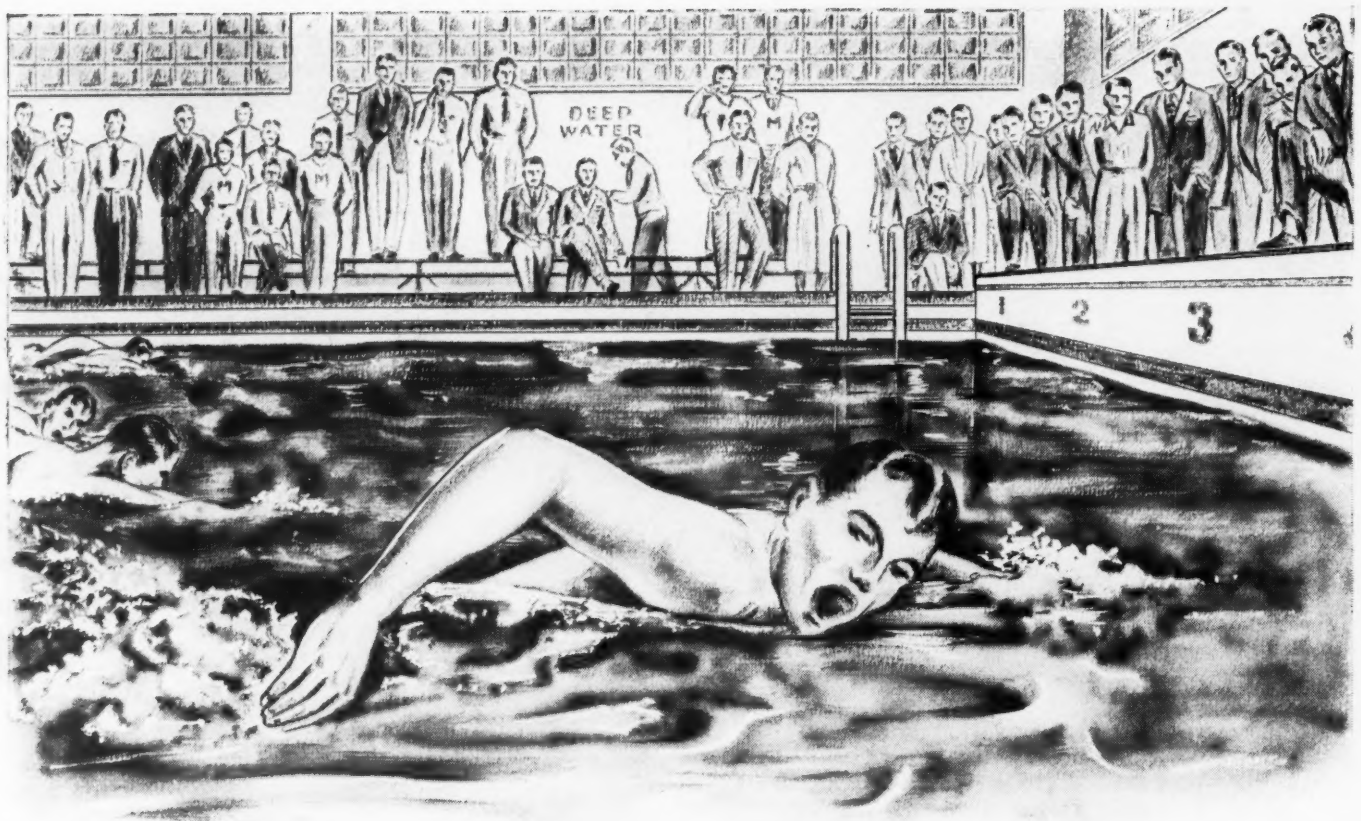
*Another  
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that make  
Northwest  
a Real  
Rock Shovel*

*... and when  
you have a  
real Rock Shovel  
you won't have  
to worry about  
output in dirt*

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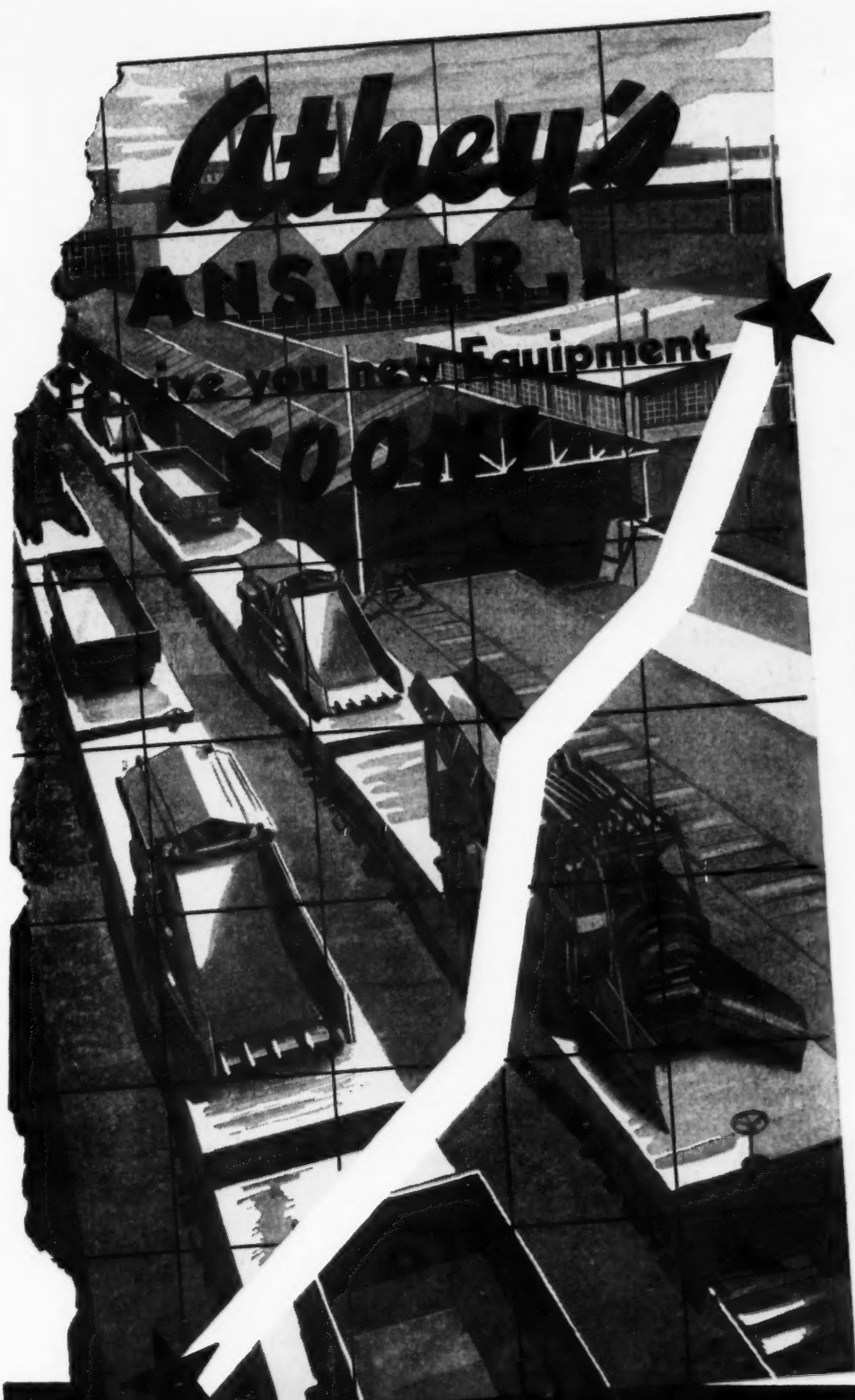
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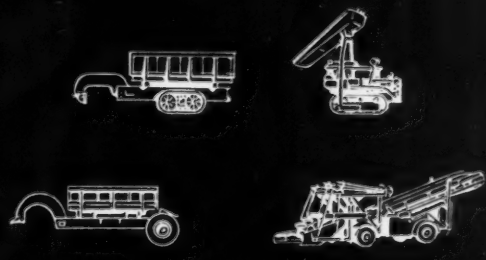
That's "Athey's Answer" ... and the reason you will receive your urgently-needed machines sooner than you expected!

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Chicago 38, Illinois



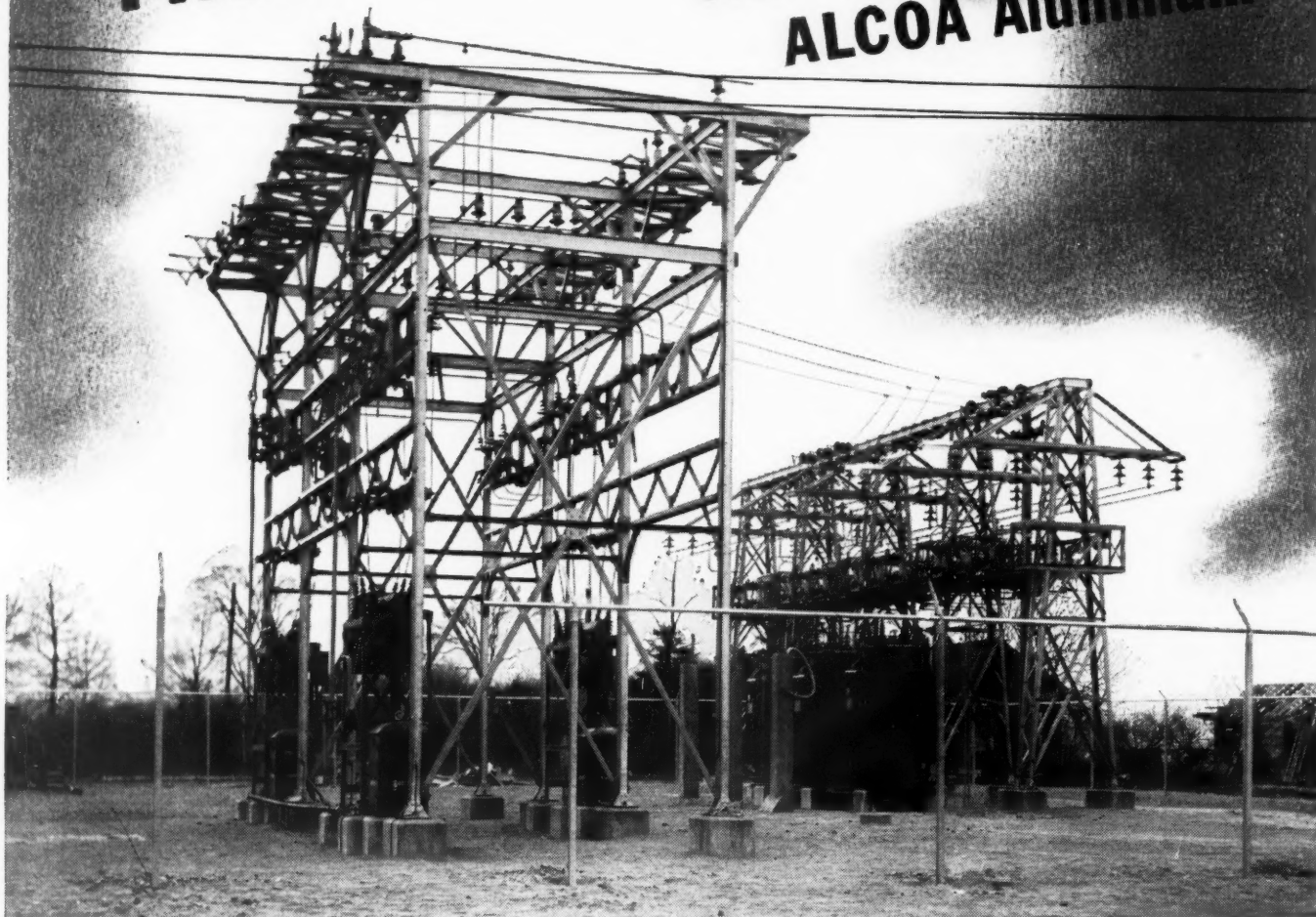
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**DEPENDABLE HAULING AND LOADING EQUIPMENT**



# FROM THE GROUND UP

these structures are  
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*4kv. and 11kv. Powell Avenue substations of the Pennsylvania Electric Company at Erie, Pa. Fabricated by: Railway & Industrial Engineering Company of Greensburg, Pa.*

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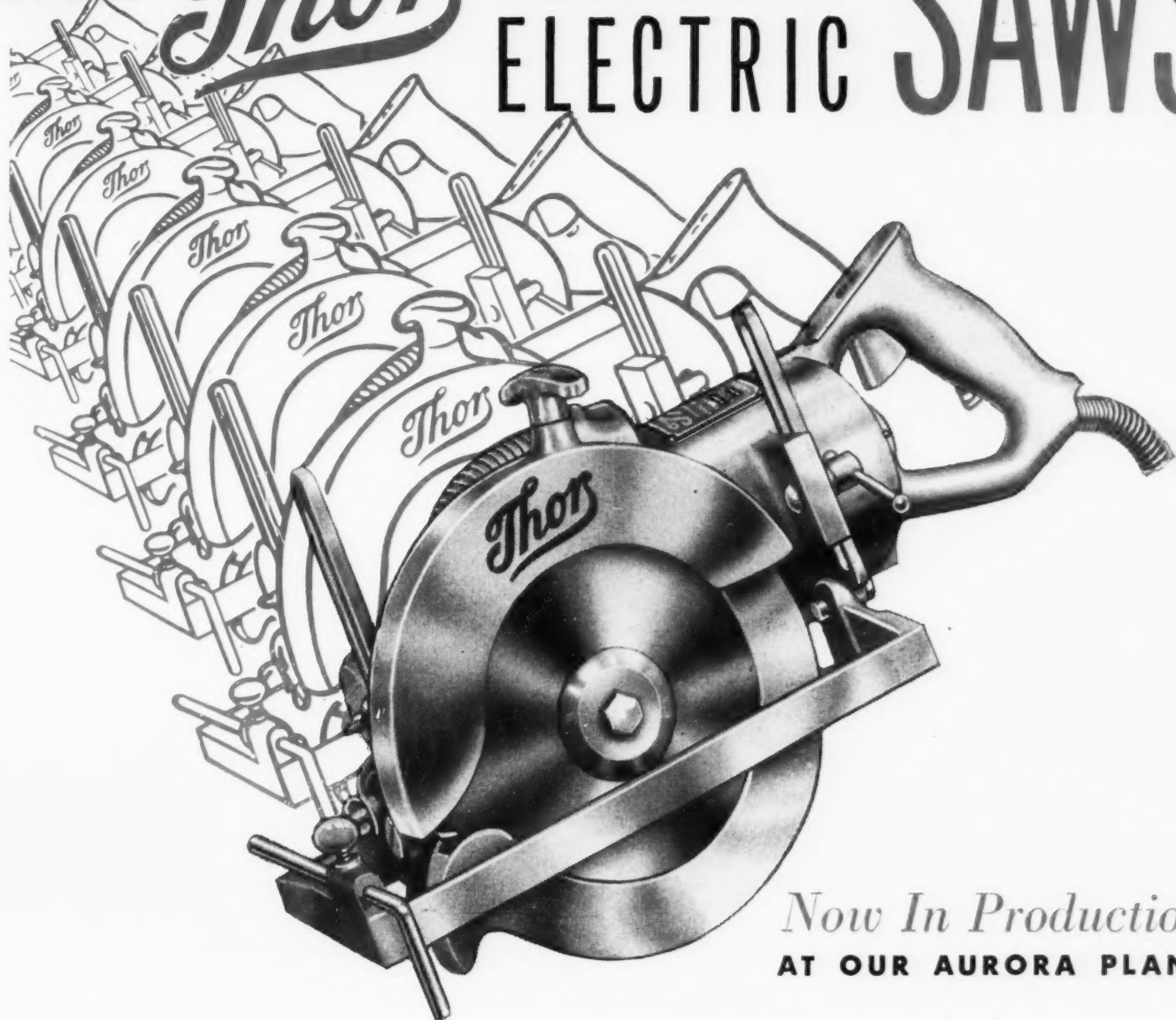
For design data and prices, call the nearby Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 1865 Gulf Building, Pittsburgh 19, Pa.

# ALCOA FIRST IN ALUMINUM





# NEW *Thor* PORTABLE ELECTRIC SAWS



*Now In Production*  
**AT OUR AURORA PLANT**

Here they come—packed full of new tool features—the new Thor Portable Electric Saws!

Now in production in volume for delivery through Thor distributors everywhere, these new Thor Saws are available in 6", 7" and 8" blade sizes for all types of cutting in wood or metal.

See these new Thor Saw features for yourself *now*—call your nearby Thor distributor for a demonstration.

## INDEPENDENT PNEUMATIC TOOL COMPANY

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PORTABLE POWER

# TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

# "CATERPILLAR"

**T**here are three solid reasons why so many contractors are standardizing on "Caterpillar" Diesel equipment. One is performance—more work, in less time, at lower cost. Another is the ruggedness, dependability and operating economy of the machines themselves. The third is "Caterpillar" dealer service—fast, thorough, and providing the advantage of interchangeable parts.

Clyde O. LaPlant, of Sikeston, Missouri, tells why he used 100% "Caterpillar" Diesels on a recent levee contract in Arkansas, and puts it in few words: "For economy, parts, service and performance they are best."

Working on this job were two track-type "Caterpillar" Diesel Tractors—a D8 and a D7—for bulldozing and disking; five "Caterpillar" Diesel DW10 Tractors, pulling "Caterpillar" W10 Wagons; a "Caterpillar" Diesel No. 12 Motor Grader, and two Lorain draglines, both powered by "Caterpillar" Diesel Engines.

"Caterpillar" builds both track-type and wheel-type tractors—matched "Caterpillar" Bulldozers, Scrapers and Wagons to team up with them—and "Caterpillar" Diesel Motor Graders and Engines. The "Caterpillar" line gives you every unit needed to *zone your equipment* for LOWEST COSTS ON EARTH.

**CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS**

A "Caterpillar" Diesel No. 12 Motor Grader maintains haul roads for the fast-moving DW10s that carry earth to the levee.



# ACROSS THE BOARD

One of 5 "Caterpillar" Diesel DW10 Tractors with W10 Wagons, working night and day on the levee near Joiner, Ark. Each delivers about 90 yds. of earth per hour on a 3000-ft. round trip. The Lorain dragline is "Caterpillar" Diesel powered.



# CATERPILLAR DIESEL

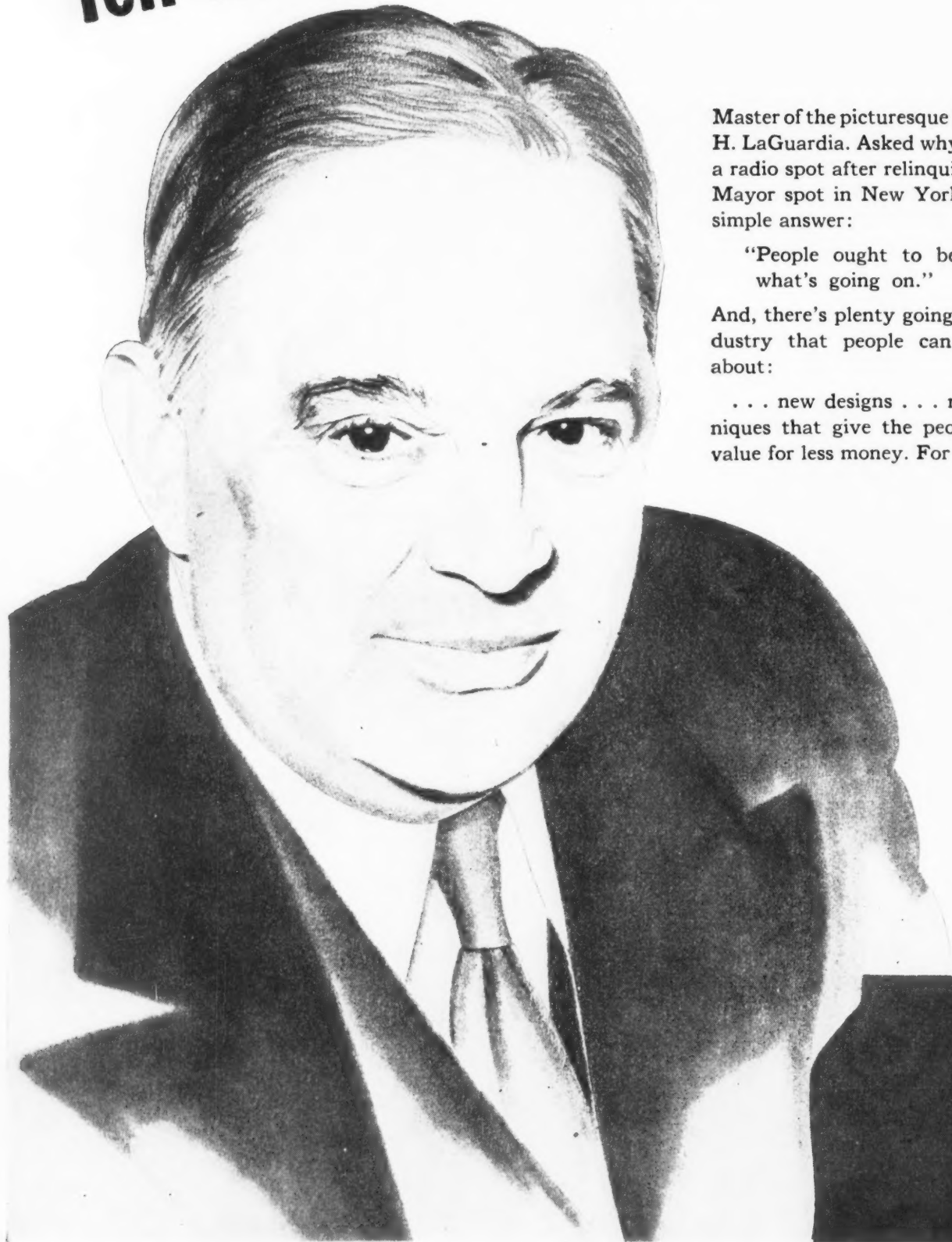
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ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

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*then he said to himself:*

# **Tell the people what's cookin'**



Master of the picturesque is Fiorello H. LaGuardia. Asked why he chose a radio spot after relinquishing the Mayor spot in New York . . . his simple answer:

"People ought to be told what's going on."

And, there's plenty going on in industry that people can be told about:

. . . new designs . . . new techniques that give the people more value for less money. For example:



**LOOK, MR. LAGUARDIA**, how engineers and contractors are stepping out in front with the world's leading electrode—

## "Cooking" with Fleetweld...



**Boosting capacity 100%.** Flooring of this 53-year old bridge at Scranton, Pa., was strengthened by welding floor buckle plates to stringers and reinforcing with spirals of  $\frac{5}{8}$ " and  $\frac{1}{2}$ " round bars, each loop welded to floor plates. Former load limit was 6 to 8 tons. Now 15 tons. Eliminates former vibration. "Fleetweld 7",  $\frac{1}{4}$ " size with 300 amps., speeded the job.



**Creating better structures.** Improvements, such as this rigid frame structure, are made possible by arc welding. Cuts tonnage 15% to 25%. Maximum use of shop fabrication with speedy "Fleet-Welding" Technique cuts costs. Only 300 man-hours required for erection of this structure.



**Simplifying roof installation.** Panels of 20-gauge formed sections are applied by plug welding them to purlins. Enamel was broken with a hammer, and  $\frac{5}{32}$ " "Fleetweld 5" with 200 amps. penetrated through sheet and welded it to purlin. Total of 1680 welds made in 14 hours.



**The sign of good "cooking".** When you see 3 DOTS on an electrode, you know you have genuine "Fleetweld" . . . the world's leader for *low cost*, *speed* and *quality*. New, handy pocket manual giving procedures for all kinds of jobs free on request. Ask for Bul. 437.

*New Lincoln sound-color movies available free for showing to groups. Write for information.*

**THE LINCOLN ELECTRIC COMPANY • DEPT. 352 • CLEVELAND 1, OHIO**

*America's greatest natural recourse*  
**ARC WELDING**

# When You're Traxcavating, You're PROFIT-MAKING!

TRAXCAVATORS get things done! Put them to work digging, loading, carrying, grading and watch your hourly production climb — your operating costs fall. TRAXCAVATORS are seldom idle because these versatile, multi-purpose machines combine the usefulness of a shovel, loader, scraper, bulldozer — and with the available interchangeable attachments, they are the "workingest" machines you ever saw. More work, on more jobs, more days in the year mean low-cost, top notch performance and greater profit.

TRAXCAVATORS are built in several sizes — for every job and purpose — with bucket capacities from  $\frac{1}{2}$  to  $2\frac{1}{2}$  cubic yards. Each is a balanced unit with the rugged "Caterpillar" track-type tractor by which it is powered. Learn now why it pays you to traxcavate—get the facts from your TRACKSON—"Caterpillar" dealer or write direct to TRACKSON COMPANY, Dept. CM-76, Milwaukee 1, Wisconsin.

Top Views: TRAXCAVATOR on Illinois sewer job — clearing, grading and transporting concrete pipe

Lower Right: Grading and leveling around new home

Lower Left: IT4 TRAXCAVATOR digging a house basement



## TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR





**"You can't beat *Porto-Power*\*  
as an all-purpose tool for  
Construction and Maintenance Work"**

"No matter what the job, I just reach for Porto-Power. It's like giving my hands tons of power, because this hydraulic tool can do most anything. It pushes, pulls, lifts, bends, presses, spreads, clamps, and straightens. And for my money it's a lot safer to stand out of the way and let hydraulic power provide the muscle instead of 3 or 4 of my men."

*Porto-Power with special attachments is made in 2, 4, 7, 10, 20, and 50-ton capacities. Order Porto-Power from your Industrial Supply Distributor.*

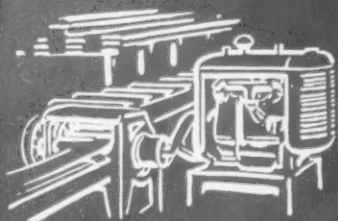
\*Reg. U.S. Pat. office

**There is only one *Porto-Power*\*... it is made by**

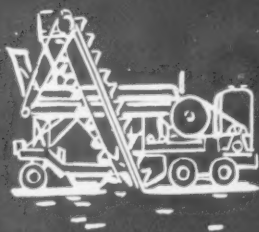
# BLACKHAWK

**A Product of BLACKHAWK MFG. COMPANY, Dept. P2376, Milwaukee 1, Wis.**

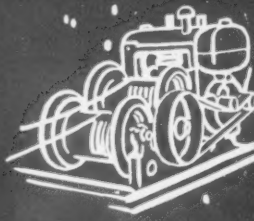
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SAWMILLS



ROCK CRUSHERS



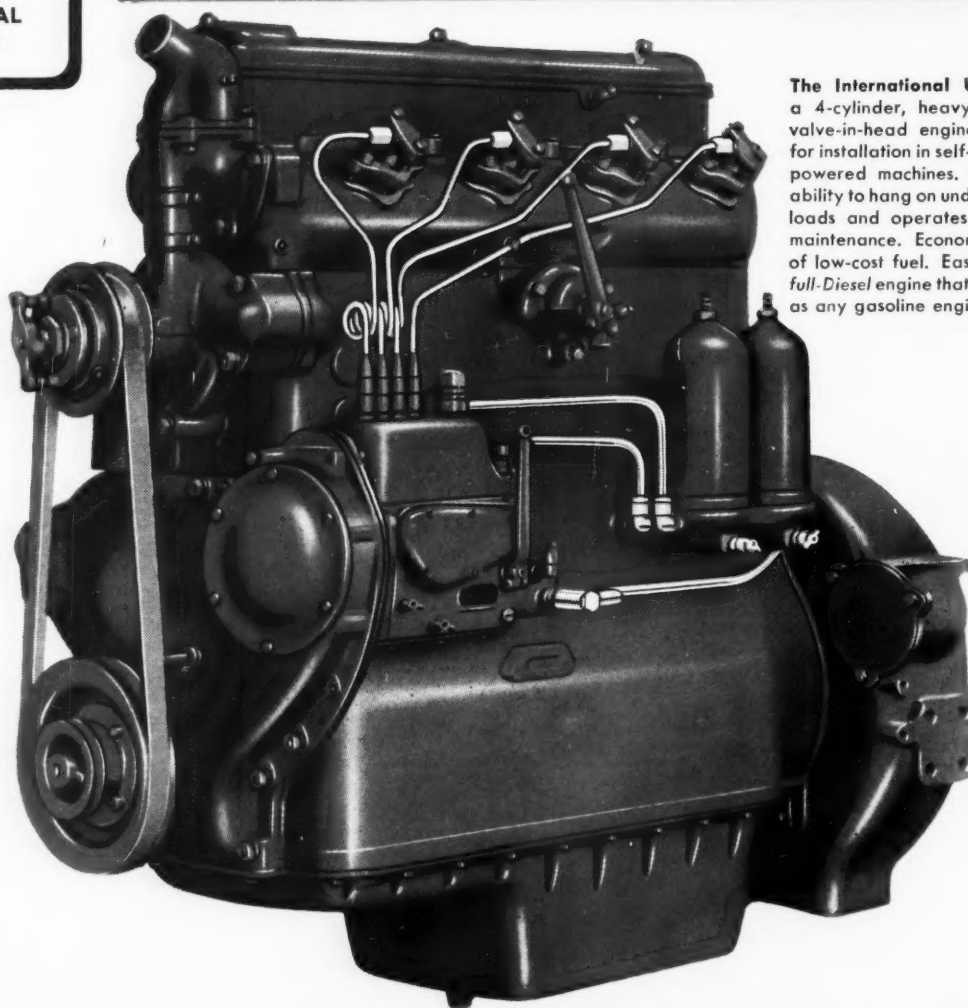
HOISTS



POWER SHOVELS

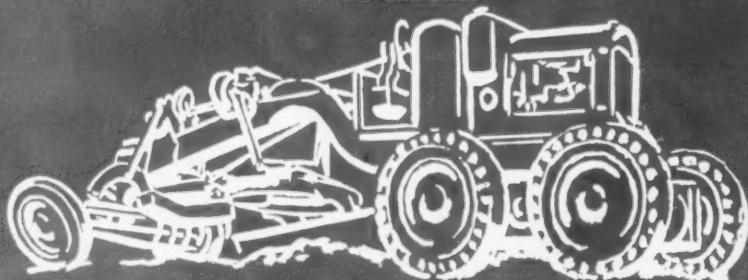


# INTERNATIONAL

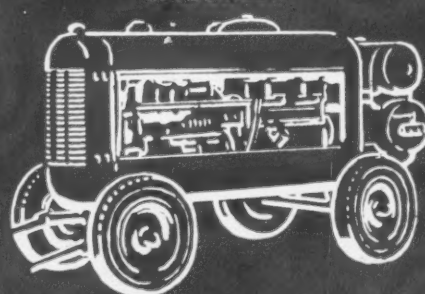


The International UD-14 Diesel, a 4-cylinder, heavy-duty, 4-cycle valve-in-head engine, as supplied for installation in self-propelled and powered machines. It has unusual ability to hang on under heavy overloads and operates with minimum maintenance. Economical in its use of low-cost fuel. Easily serviced. A full-Diesel engine that starts as easily as any gasoline engine of like size.

MOTOR GRADERS



COMPRESSORS

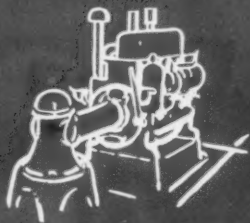


*On Highways, Railways and Waterways*  
International Industrial Power

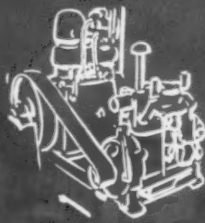




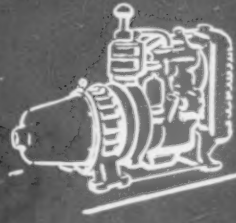
MARINE



PUMPS



ICE MACHINES



GENERATORS

# DIESEL ENGINES

## *for Full-Diesel Economy*

● If it's powered by an International Diesel Engine you have assurance of *full-Diesel* performance and matchless operating economy in the powered equipment you buy. With it you get more work accomplished per dollar of cost for fuel and maintenance.

International Diesels are smooth-running, 4-cycle, *full-Diesel* engines. Advanced design fuel injection and combustion assures full use of the fuel consumed. And International's positive, instant starting system makes any International Diesel as easy to put to work as any gasoline engine of like size and horsepower. That means no excess weight, no wasted time, no hesitation when you want power on the job!

There are many features that give International Diesel engines long life with minimum maintenance. *Tocco-hardened crankshafts; valve-in-head design; replaceable, long-life cylinders of*

*heat-treated alloy steel; full-pressure lubrication through rifle-drilled passages; heavy-duty precision bearings of replaceable type; full-floating piston pins; full-floating water pump shaft; by-pass type thermostatically-controlled cooling; large-capacity air, oil and fuel filters; etc.* Only International Diesels have all these features!

Any powered equipment is, therefore, better equipment because of the dependable International Diesel Engine that powers it. Visit any distributor who handles International-powered equipment for further facts and help in selecting the equipment you need. For International Diesel Crawler Tractors, Wheel Tractors or Power Units, see your nearest International Industrial Power Distributor.

*Industrial Power Division*

**INTERNATIONAL HARVESTER COMPANY**

180 North Michigan Avenue

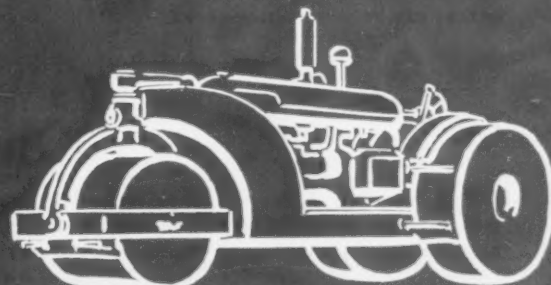
Chicago 1, Illinois

## INTERNATIONAL Industrial Power

DITCH DIGGERS



ROAD ROLLERS



*In Cities, Forests, Mines and Factories  
Makes the Tough Jobs Pay*

# FASTENINGS

## FOR CONSTRUCTION

No matter what kind of construction work you may have in mind, look to Bethlehem for fastenings. Here are some of the fastenings manufactured by Bethlehem for docks, piers, bulkheads, prestressed concrete tanks and similar construction.

All of the products described below can be supplied hot-dip galvanized. Further information about fastenings will gladly be furnished on request.

**TIE-RODS**—Conforming to ASTM Specification A-7, Bethlehem tie-rods are furnished plain or upset, in single or multiple units, and with either cut or rolled right- or left-hand threads.

Single-unit tie-rods with cut threads are furnished in diameters up to 4 in. thread size, and in lengths up to 46 ft. For special requirements, they can be furnished in lengths up to 65 ft. Multiple-unit rods are made in any length.

Rolled-thread rods are furnished in sizes up to 1½ in. thread diameter. These rods generally have greater strength than cut-thread rods of equal diameter, and they effect a two-fold saving—in cost and weight of material. Bethlehem tie-rods may be supplied with black asphaltum coating when so specified.



**DRIFT BOLTS**—Bethlehem drift bolts are made from new-billet steel to ASTM Specification A-7. They are furnished in the following styles of heads and points:

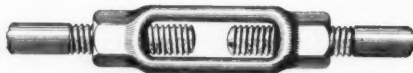
Heads: Button, Countersunk, Square and Headless.

Points: Wedge, Half or Semi-Cone, Full Cone, No Point.

Bodies of drift bolts are usually round, but square bodies can also be furnished. Drift bolts without heads or points are usually called Dowels, and their ends are burred so they can be more easily driven.



**SPIKES**—Have sharp, easy-driving wedge points, and their scaled corrosion-resistant surface provides dependable holding power. Furnished with Diamond, Button, Nail, Countersunk and Hook Heads. Spikes with Countersunk Heads are round. All others have square bodies.



**TURNBUCKLES**—Physical tests have proved that Bethlehem turnbuckles will sustain a greater load than the soft steel rods with which they are used. These turnbuckles are made in sizes from ¾ in. to 2¾ in., with 6-in. openings between the heads; they can also be furnished with 12-in. openings in sizes from ¾ in. to 1½ in., inclusive. They are furnished with hexagon ends, with right- and left-hand threads. Stub ends can also be supplied.



**U-BOLTS**—Bethlehem U-Bolts are made from either round or square material in a wide variety of types and sizes.

Large size U-Bolts (from ¾ in. diameter upward) are also furnished threadless, and with either cone or wedge points. They are intended for use in stapling, and are sometimes referred to as staples.



**TIMBER BOLTS**—The head and four diamond-shaped lugs of this timber bolt are forged in a single piece. The bolt fits tightly to timber, and can easily be applied by one man. It is economical to use because it eliminates one washer and counterboring. Retards dry rot and will not turn in timber. When used in docks and wharves the large, smooth head prevents damage to boats.



**WASHERS**—Made from steel plate or bars; round, square or rectangular.

Round washers are made in two styles: standard and dock. Square and rectangular washers are not standardized and are made to order.

O-Gee and Bevelled washers can also be supplied.



**CLEVISES**—Bethlehem clevises are furnished in sizes from ¾ in. to 2¾ in., threaded to American Standard Coarse-Thread Series, Class 2. Furnished with either right- or left-hand threads, with stub ends, or with pin and cotter.



**BOLTS**—Machine, Carriage, Lag

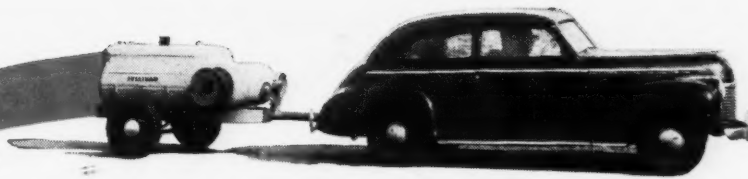
Bethlehem bolts and nuts are usually furnished of new billet steel to ASTM Specification A-7. Machine bolts are made in a complete range of sizes, with square, hexagon, tee, button, countersunk and hook heads. They can be furnished with either cut- or rolled-threads. Bethlehem also furnishes common carriage bolts and lag bolts. Unfinished square or hexagon head bolts and nuts are carried in stock.

**BETHLEHEM STEEL COMPANY**  
General Offices: Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

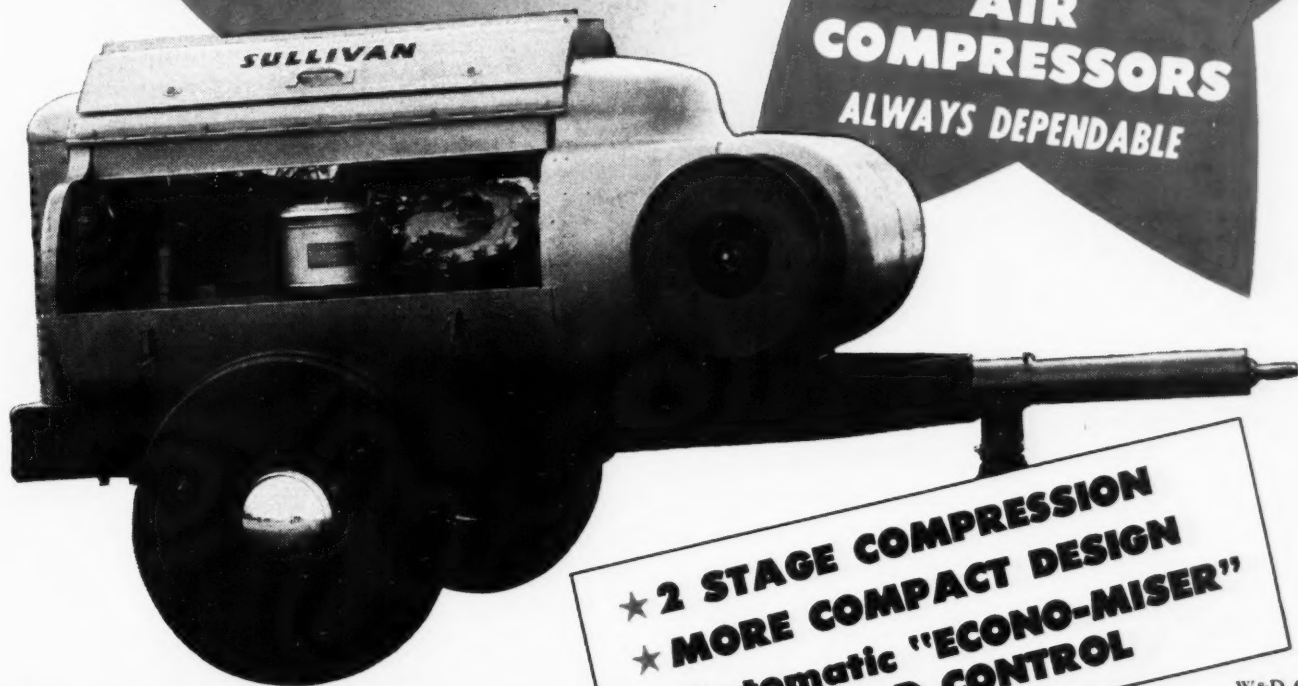






# PEAK AIR POWER ON THE JOB

**THE NEW  
SULLIVAN  
SERIES 80  
PORTABLE  
AIR  
COMPRESSORS  
ALWAYS DEPENDABLE**



- ★ 2 STAGE COMPRESSION
- ★ MORE COMPACT DESIGN
- ★ Automatic "ECONO-MISER"  
LOAD CONTROL

W&D C501



## SULLIVAN

"The World's Most Modern Portable Compressed Air Plant"

PORTABLE AIR COMPRESSORS FROM 60 TO 630 CFM

SULLIVAN DIVISION

### JOY MANUFACTURING COMPANY

GENERAL OFFICES: NINET W. OLIVER BUILDING, PITTSBURGH, PA.

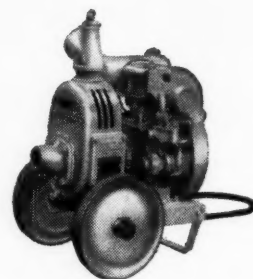
*Write for Bulletin*



### "He says it reminds him of his Rex Pump!"

A Rex Pump is "Old Faithful" around any construction job. Just spot it, start it and forget it. That's all there is to it. Rex will keep right on pumping as long as there's water in the hole . . . not for just one job or for one season, but for many a year of tough, dependable service.

From the husky little 1½-inch Rex "Jr." to the big 6-inch 90,000-gallon-per-hour pump, all Rex pumps are "Old Faithfuls." You can see them at your local Rex Distributor. Or, if you prefer, write direct to Chain Belt Company, 1664 West Bruce Street, Milwaukee 4, Wisconsin.



**CHAIN BELT COMPANY of MILWAUKEE**

**CONSTRUCTION MACHINERY**



PUMPS



PAVERS



PUMPCRETES



MOTO-MIXERS



MIXERS



*For*  
**FREE-ROLLING  
FLOTATION...**

CHOOSE  
**Firestone**  
EARTHMOVER

**O**UTSTANDING ability of Firestone Earthmovers to furnish maximum flotation for capacity loads is recognized by earthmoving contractors the world over. Designed for free-rolling wheels of scrapers, tractor and trailer wagons and buggies, the low pressure Earthmover with its large cross sectional diameter rolls easily over sand, loose fill and gumbo. The extra tough, cut-resistant tread design keeps heavily loaded units from side-slipping or skidding on side hill hauling. The tire body, made of heaviest, strongest rayon has *four extra tread plies* to cushion impact blows which cause failure in less rugged tires. Double thick sidewalls protect against rutwear and snagging. *Firestone Earthmover tires, working for you on your equipment, will cut your operating time — and costs — to the minimum.*

*Listen to the "Voice of Firestone" every Monday evening*

**GROUND GRIP**

Designed to transmit greatest possible traction to drive wheels of earthmoving equipment, this tire outpulls, outrives, any tire ever made.

**ROCK GRIP  
EXCAVATOR**

Combines great stamina and extra traction in toughest trucking operations, quarrying, logging, construction work, ore and coal strip mining.

**Firestone OFF-THE-HIGHWAY TIRES**

Copyright, 1946, The Firestone Tire & Rubber Co.

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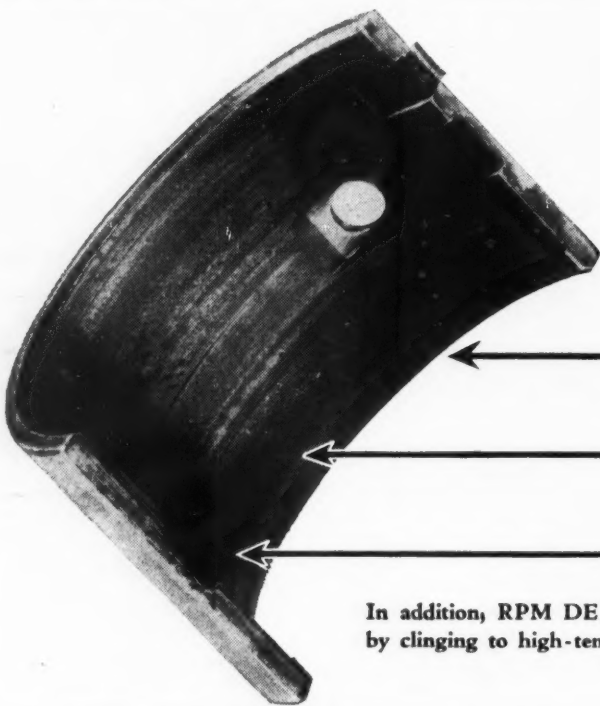
# Diesel Engine

# DANGER

# points

## Alloy bearings corroded by unstable lubricants

The high pressures and temperatures in present-day Diesel engines greatly accelerate oxidation of some lubricants. Under such conditions, these oils tend to become corrosive and attack the lead in the copper-lead structure of alloy bearings. This leaves a porous copper shell which breaks down under pressure. The illustration shows how an alloy bearing looks after operation with an un compounded oil.



## RPM DELO Oil gives bearings 3-way protection against corrosion

1. RPM DELO Diesel Engine Lubricating Oil base stocks are naturally resistant to oxidation, the cause of most lubricants becoming corrosive.
2. RPM DELO Oil is *compounded* to further reduce the danger of oxidation.
3. RPM DELO Oil's oxidation inhibitor gives bearings direct protection against corrosion.

In addition, RPM DELO Oil is compounded to prevent ring-sticking, to reduce wear by clinging to high-temperature areas most oils leave bare, to eliminate foaming.

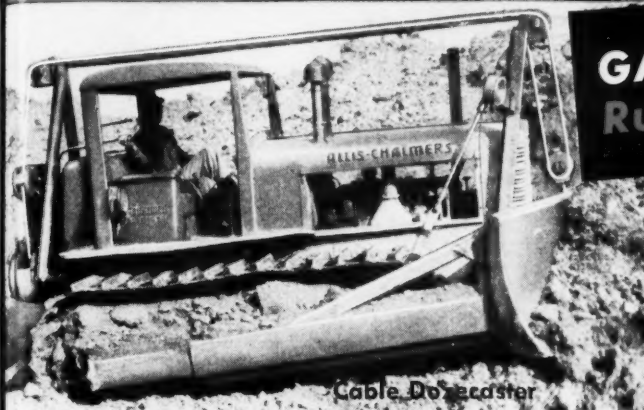
To match the fine performance of RPM DELO OIL, use these equally efficient companion products from the same famous "RPM" line—RPM HEAVY DUTY MOTOR OIL—RPM COMPOUNDED MOTOR OIL—RPM GEAR OILS AND LUBRICANTS—RPM GREASES. For additional information or name of your distributor, write any of the companies below:

STANDARD OF CALIFORNIA • 225 Bush St., San Francisco 20, California  
THE CALIFORNIA COMPANY • 17th and Stout Streets, Denver 1, Colorado  
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas  
THE CALIFORNIA OIL COMPANY • 30 Rockefeller Plaza, New York 20



# Down-to-Earth Engineering

**GAR WOOD Cable Controls Feature**  
Rugged Simplicity and Direct Action Pull



Cable Dozer

The cable goes direct to the job in GAR WOOD Cable-Controlled Road Machinery. As a result, it has fast action, positively controlled.



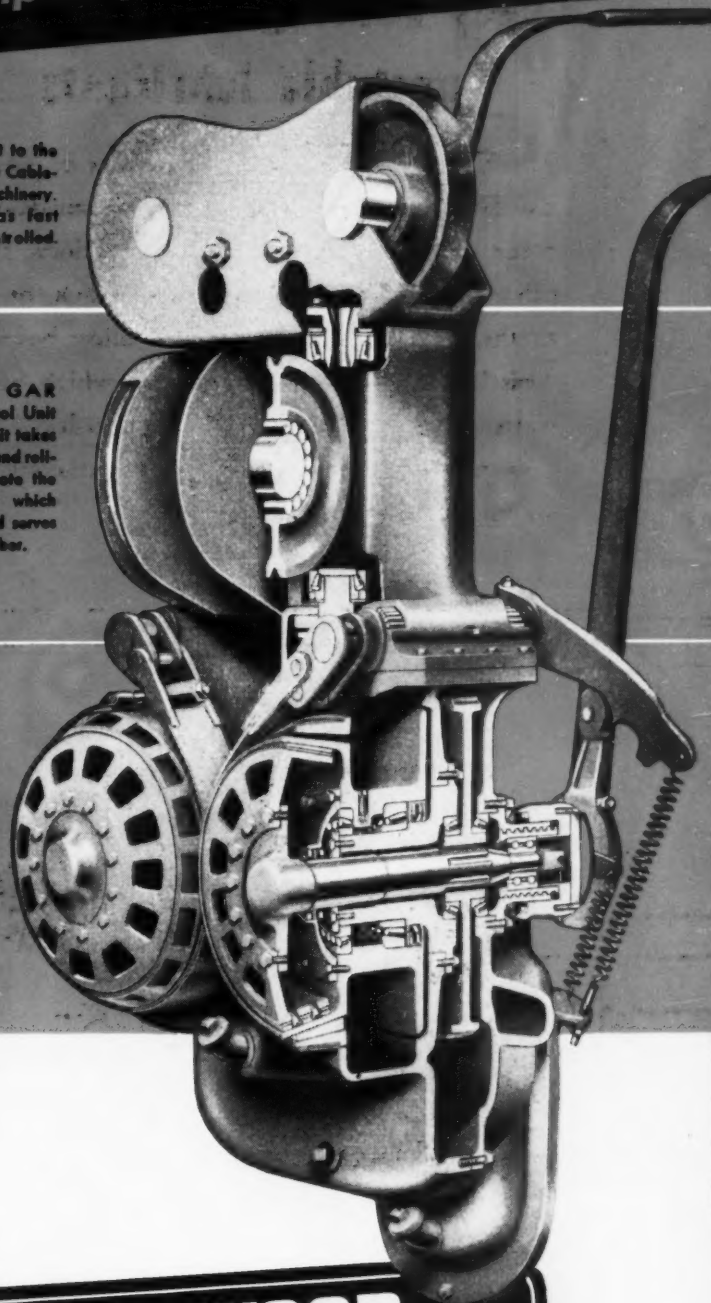
Heavy-Duty Cable Ripper

The job-proved GAR WOOD Cable Control Unit (right) has everything it takes for smooth operation and reliable performance. Note the sturdy steel housing which prevents distortion and serves as a lubrication chamber.



4-Wheel Cable Scraper

Outside clutches and serve-type, self-energizing brakes cool themselves and are readily accessible. Roller bearings throughout and spur-type gears keep adjustments at a minimum.

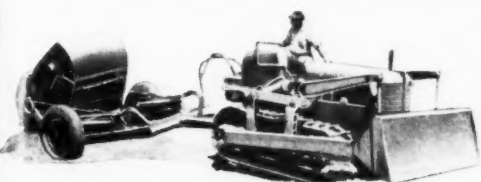


PROVED through the years on the toughest of jobs. Made more rugged than ever by the lessons learned in war action on every front, from Guadalcanal to Okinawa and from Oran to Berlin.

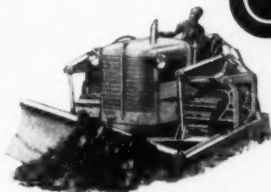
GAR WOOD Road Machinery and the famous GAR WOOD Cable Control Power Unit offers practical design and sound construction, well engineered and honestly built—equipment that *holds together* and can be operated with an absolute minimum of down time. *If it's GAR WOOD, it's good.*

See your Allis-Chalmers dealer. He'll be happy to give you all the facts and show you Gar Wood Earth Moving Equipment *on the job* in your own vicinity.

**GAR WOOD**  
**ROAD MACHINERY**  
WITH ALLIS-CHALMERS DIESEL POWER



Gar Wood 2-Wheel Hydraulic Scraper and Bulldozer



Gar Wood Hydraulic Dozer

OTHER GAR WOOD PRODUCTS: HOISTS AND BODIES • TANKS • WINCHES AND CRANES • HEATING EQUIPMENT • MOTOR BOATS



Sold Through  
**ALLIS-CHALMERS**  
Dealers Everywhere

ROAD MACHINERY DIVISION  
**GAR WOOD INDUSTRIES, INC.**  
DETROIT 17, MICHIGAN





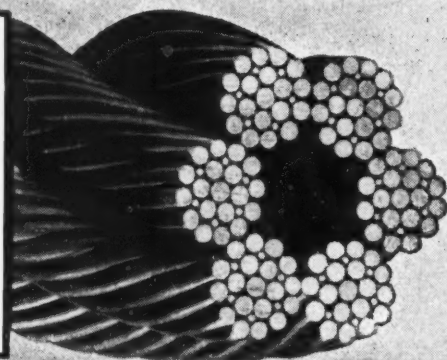
# union Wire Rope



"Steel Tendons" is a new book of photographs and descriptions which show you how Union Wire Rope is made, from the laboratory to the master reel.

Nine educational bulletins entitled "Rope Dope" are published at frequent intervals. They contain valuable information for the wire rope user on such subjects as: replacement of wire rope as to size, tread, diameter, type of construction and correct grades of steel; explanation of the lays of wire rope; types of wire ropes with complete specifications; factors which determine rope life; installation and abuses to be avoided; care of wire rope; abuses and their results and figuring the working load and actual stresses.

Union-formed wire rope is designed to do specific jobs better—longer and with greater economy. Internal stress and strain are removed by special forming giving Union-formed more flexibility and stamina.



## union-formed (preformed)

THE ULTIMATE IN LOW COST WIRE ROPE



# is Made by Specialists Who Share Their Knowledge to Help Users Get Maximum Service

Ours is an organization of specialists devoting their whole time to the making of wire rope and to its application.

The latter is of importance to the user because the life and efficiency of the best wire rope is fore-shortened if improperly applied.

To safeguard against this, distributors of Union Wire Rope are fully equipped with a thorough working knowledge of wire rope application and are capable of making sound recommendations.

To post users of Union Wire Rope on proper application and on many other factors involved in its use, a library of useful information is published. Sent gratis on request.



## UNION WIRE ROPE CORPORATION

2174 Manchester Avenue

Kansas City 3, Missouri, U. S. A.

Send book or bulletin as checked.

Firm Name \_\_\_\_\_

By \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

- ☐ Steel Tendons
- ☐ Rope Dope No. 1
- ☐ Splicing Wire Rope
- ☐ Correct Handling of Wire Rope
- ☐ Socketing Wire Rope
- ☐ Wire Rope Lubrication

State above use of wire rope contemplated

# CUT OPERATING COSTS

*with*  
**FRAM**  
*Oil Filters!*

*Tiny..  
but tough  
on engines*

It's a rare construction job that doesn't fill the air with dirt, dust, grit. Sucked into an engine, these abrasives wear away moving parts, cause overhauls, breakdowns and repairs. At the same time, sticky sludge, a constant enemy of internal combustion engines, can literally "gum up the works" to increase wear, decrease efficiency. But with a heavy-duty Fram Filcron oil filter, dirt, dust, grit, carbon and sludge are filtered out to save overhauls, repairs, and costly delays . . . to lengthen the life of engines!

Fram filters are engineered for the efficient, economical filtration of lubricating oil on practically any type of gasoline, gas or Diesel engine or with any conventional type pressure lubricating system. These filters contain the amazing Fram Filcron cartridge, which proved itself an outstandingly efficient filtering agent in widespread Army and Navy use during the war. The Filcron cartridge removes impurities as small as one micron (.000039 of an inch) in size, thus filtering out dirt, dust, grit, carbon and abrasives that enter the lubricating oil. With these contaminants removed, engine wear is reduced, repairs, overhauls and money are saved. For information on Fram Filcron filters, write: Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto.

*Fram Engineering Service and Laboratory are available in determining the proper installation for both lube and fuel oil filters.*

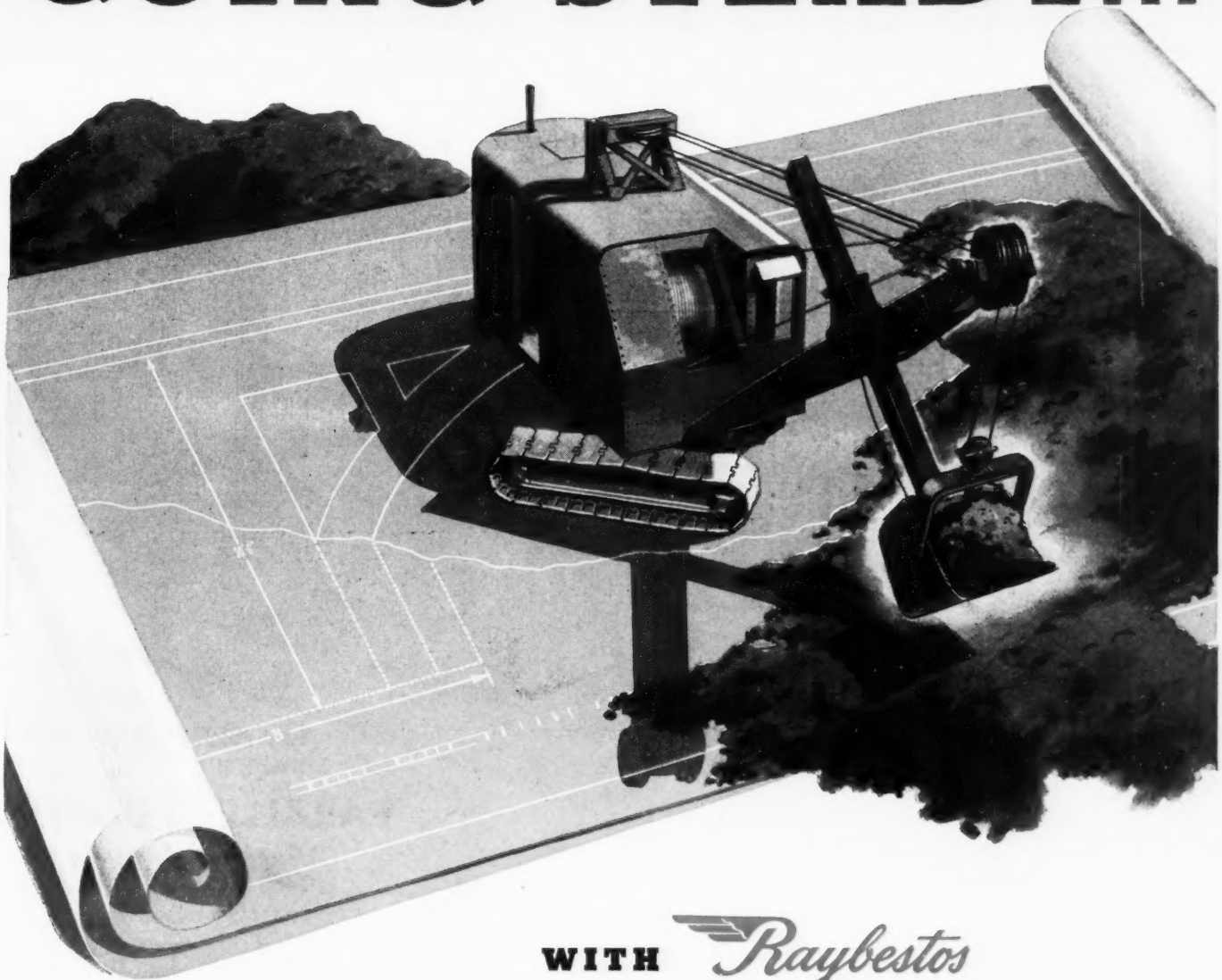


## **FRAM** Filcron Filter

**THE MODERN OIL & MOTOR CLEANER**



# GOING STEADY...



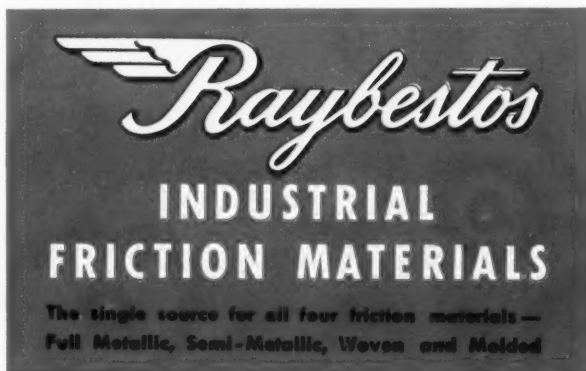
## WITH *Raybestos* AT THE FRICTION CONTROLS

● Steady going—that's what every contractor wants from every piece of equipment. Steady going—that's exactly what you get with dependable Raybestos friction materials.

Raybestos keeps going stronger, longer, because each material is specially designed for its job. Every application is an individual challenge to Raybestos engineers—different makes, models,

types of equipment call for different frictions, varying sizes, speeds and load capacities.

Whatever the work—excavating, leveling, hauling, building—you'll have less downtime, you'll keep going steady, with Raybestos at the friction controls. See your Raybestos jobber or write for replacement recommendations that will cut your operating costs.



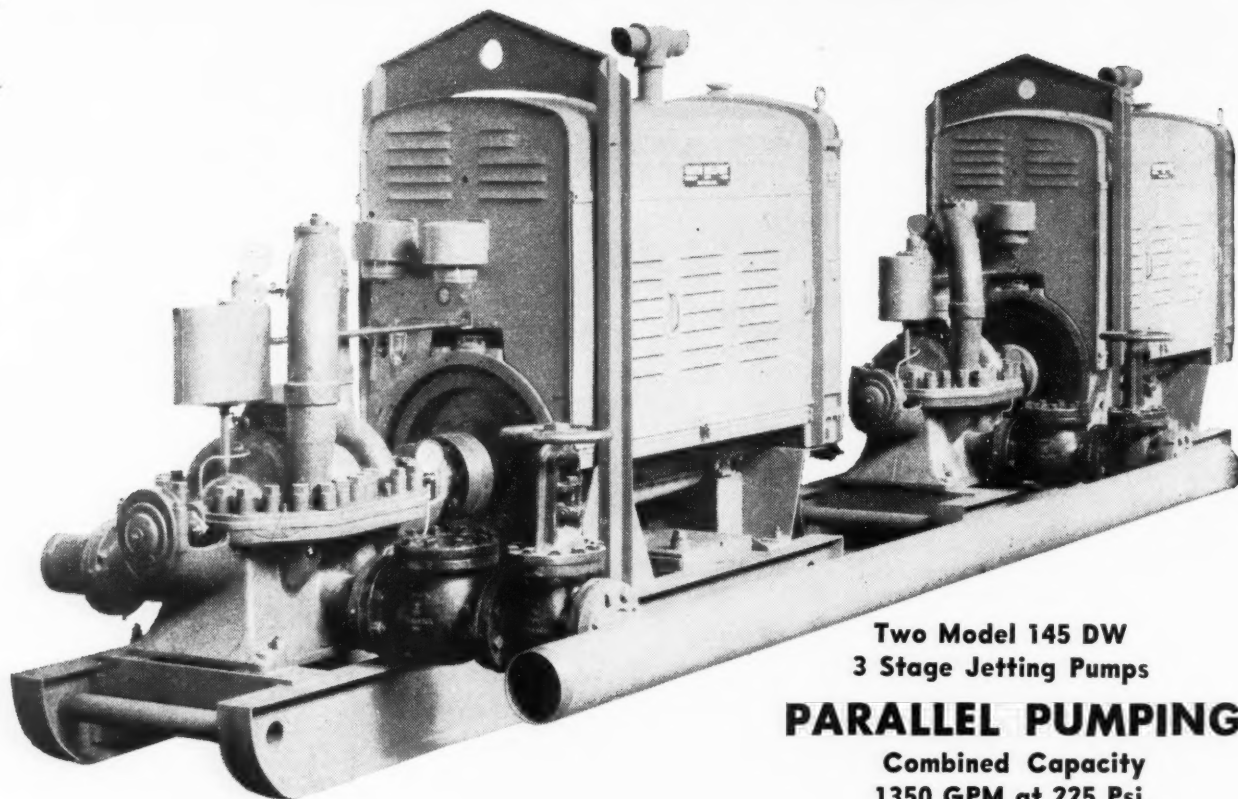
THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.  
BRIDGEPORT, CONNECTICUT

Raybestos engineers will be glad to recommend the proper friction material for any applications.



# Griffin Jetting Pump Systems

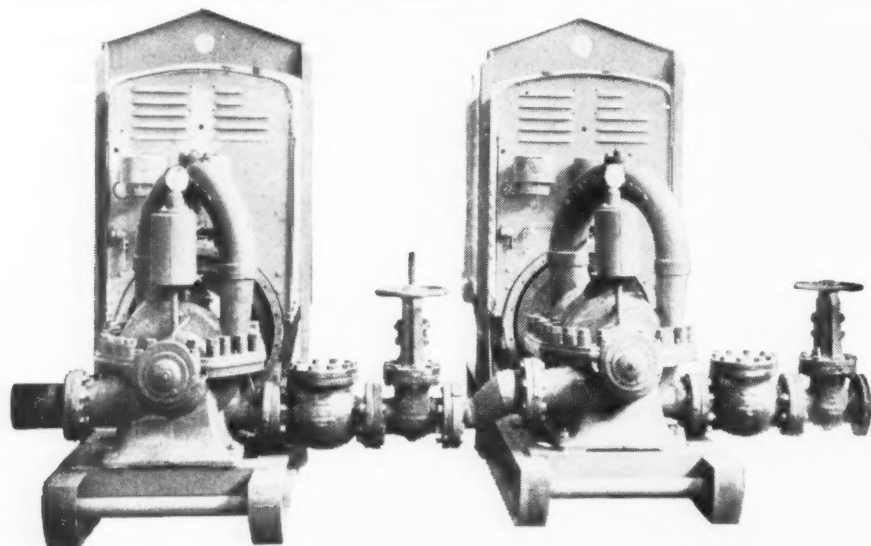
for the **"TOUGH JOBS"**



Two Model 145 DW  
3 Stage Jetting Pumps

## **PARALLEL PUMPING**

Combined Capacity  
1350 GPM at 225 Psi.



Two Model 145 DW  
3 Stage Jetting Pumps

for

## **SERIES PUMPING**

Combined Capacity  
675 GPM at 450 Psi.

## **GRIFFIN WELLPOINT CORPORATION**

MAIN OFFICE: 881 East 141st Street, New York 54, N. Y.

**Equipment Leased and Sold**

### **MID-WEST**

GRIFIN EQUIPMENT CO., Inc.  
548 Indiana Street, Sheffield 1662  
Hammond, Indiana

### **SOUTH**

GRIFIN ENGINEERING CORP.  
2016 E. Adams St., Jacksonville 5-4516  
Jacksonville 2, Fla.

# *THIS Shouldn't Happen* **to a construction job!**

An overturned salamander . . . a hot rivet . . . or a welder's torch ignites a canvas windbreak and sets off a furious fire. Thousands of dollars of new construction ruined!

*It has happened many times.*

But it won't if windbreaks, tarpaulins and other canvas materials used on the job are made of patented FIRE CHIEF Finished Hooperwood Duck. FIRE CHIEF Duck is chemically treated to resist fire. It will not support combustion. It is approved by the Underwriters Laboratories, Inc.

Mildew and sun resistant, too, FIRE CHIEF outwears untreated canvas many times.

It's cheap fire insurance — and good business — to insist on FIRE CHIEF.

**WM. E. HOOPER & SONS CO.**

New York PHILADELPHIA Chicago

Mills: WOODBERRY, BALTIMORE, MD.



*Fire-Chief Finished*

(PATENTED)

**HOOPERWOOD COTTON DUCK**

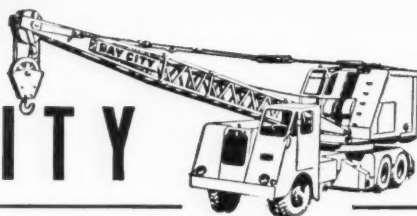


store basement excavation  
in **TIGHT SPOT** with BAY CITY hoe



It is on jobs like this where the flexibility and easy handling of a BAY CITY provide plus values that turn into profitable and economical operation. Excavation for store basement was accomplished under difficult conditions with limited room for tail swing, and wall of adjoining building adding to interference, yet the BAY CITY "45" with 19 foot boom and 42" wide dipper handled the job cleanly and quickly. No wonder Frank and Bill Walraven smile so contentedly as they perch on the catwalk of their 14th BAY CITY. For catalog and additional information see your nearest BAY CITY dealer today or write direct to BAY CITY Shovels, Inc., Bay City, Michigan.

**BAY CITY**



SHOVELS • DRAGLINES  
CRANES • HOES • CLAMSHELLS

SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from  $\frac{3}{8}$  to  $1\frac{1}{4}$  yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.

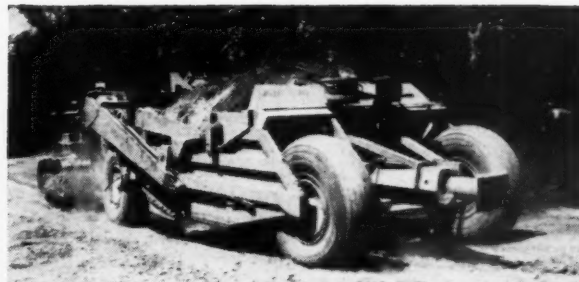


# *Yards ahead in Performance*

**... because they are years ahead in practical engineering features ...**

On job after job, you'll find the new LPC "Carrimors" outperforming other scrapers by a wide margin. They're getting bigger loads faster and with less power because every LPC feature — cutting edge, heel clearance, bowl design, hoist sheaves and apron operation — has been scientifically engineered to insure easy loading.

Regardless of the kind or condition of material, LaPlant-Choate's *exclusive* positive forced ejection gets the load out quickly and completely. Even rocks, stumps and sticky gumbo can't ever jam between the gate and apron. Moreover, the rear gate is positively returned *the full distance* every time by the weight of the apron, plus a special spring arrangement. So for lowest possible costs tomorrow, get complete facts today on the new LPC "Carrimors." LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; 1022 77th Avenue, Oakland 3, Calif.



• Low center of gravity, low over-all height and freedom from unnecessary dead weight also contribute to LPC's record of "lowest possible cost per yard."



The New 8 and 14 Yard  
LPC Carrimors\*



\*Reg. U. S. Pat. Off.

## **LaPLANT - CHOATE**

*Job-Proved Equipment...*

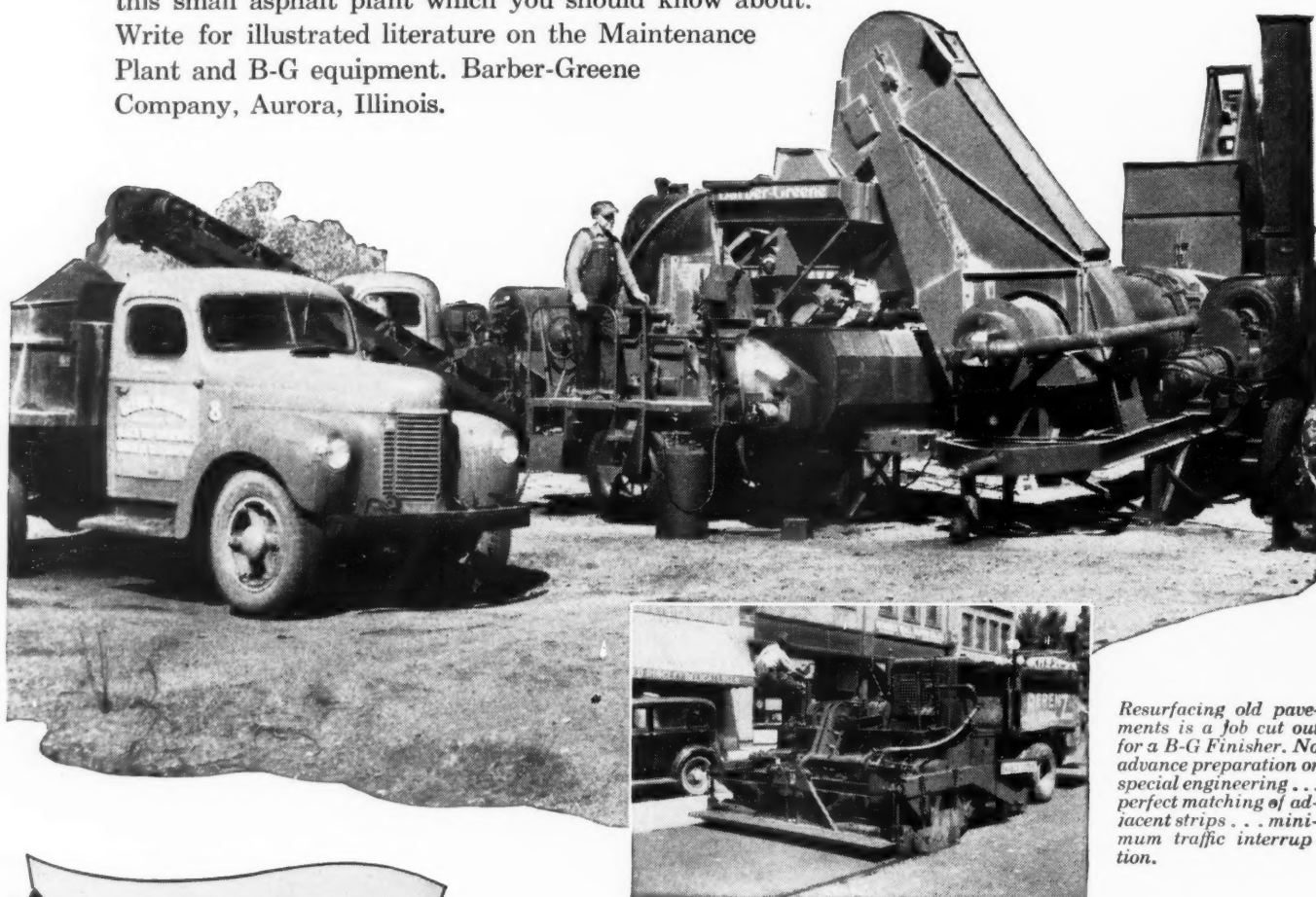
for lowest possible cost  
in Moving Earth

# Why a **B-G** Maintenance Plant Can Prepare Any Mix

• Although designed for maintenance work where capacities of 25 tons per hour and less are normal requirements, the B-G Maintenance Plant is fully capable of preparing any mix required. It will do anything its "big brother" mixers will do—it just takes a little longer!

The B-G Maintenance Plant has the same volumetric interlocked proportioning as the larger Barber-Greene Mixers. Calibrated gates—with bitumen pump interlocked to the aggregate feeder—assure a constant, accurate percentage of all ingredients. Steam jacketed pugmill and heating coils in bitumen tank permit mixing all types of mixes including those using asphalt cements.

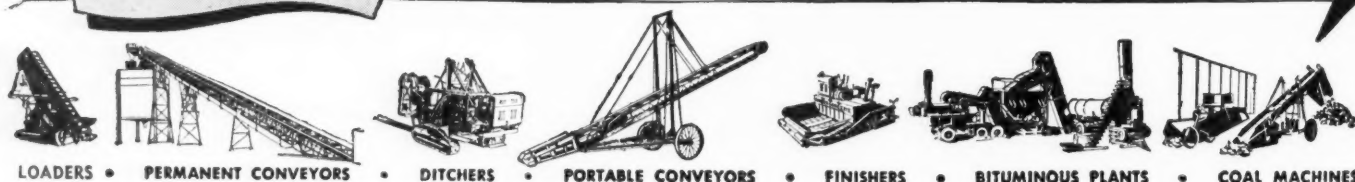
There are many mechanical features and advantages on this small asphalt plant which you should know about. Write for illustrated literature on the Maintenance Plant and B-G equipment. Barber-Greene Company, Aurora, Illinois.



*Resurfacing old pavements is a job cut out for a B-G Finisher. No advance preparation or special engineering... perfect matching of adjacent strips... minimum traffic interruption.*

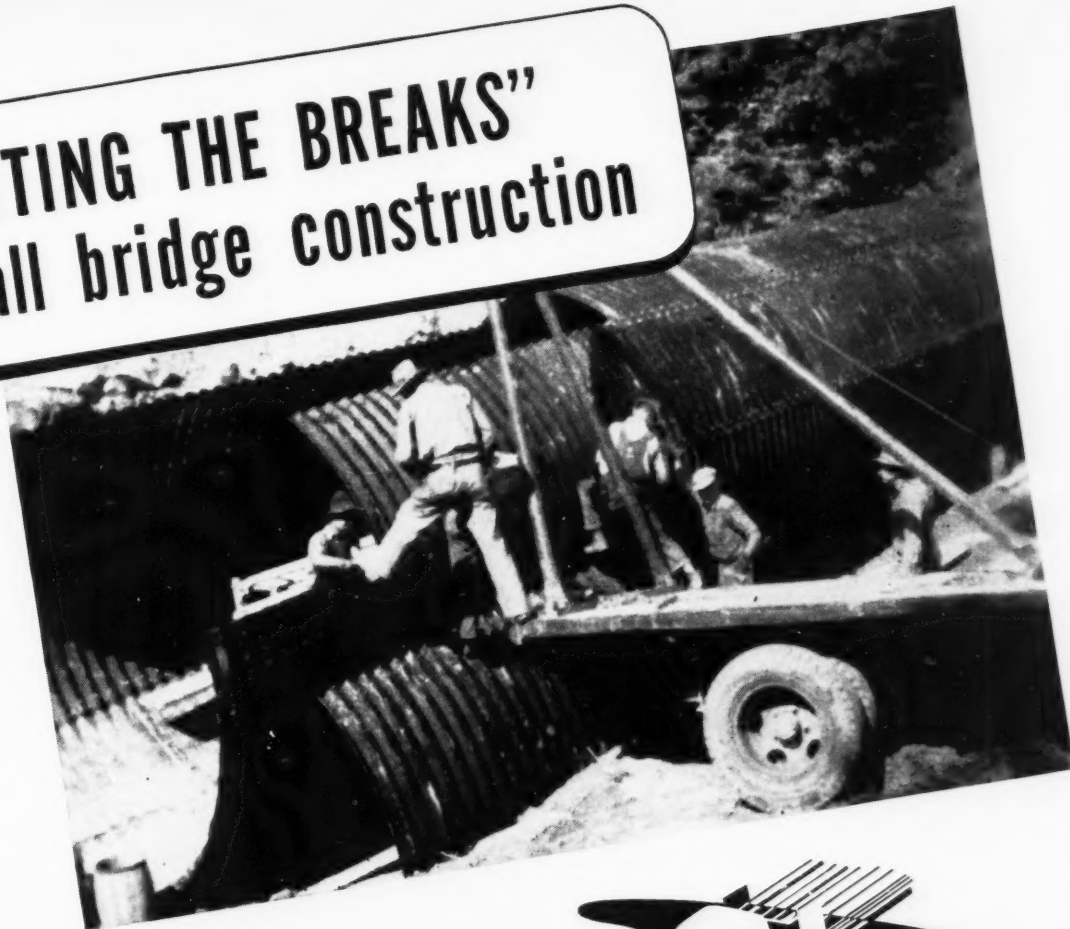


**CONSTANT FLOW EQUIPMENT**





# "GETTING THE BREAKS" on small bridge construction



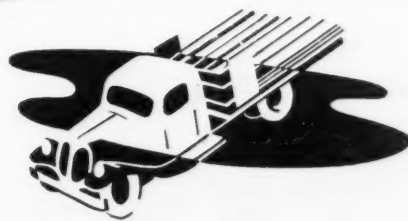
## How to Profit with ARMCO MULTI PLATE Pipe or Arches



Many experienced contractors have learned how to "get the breaks" by building small bridges and other drainage structures with ARMCO MULTI PLATE. It helps solve the four big question marks of contracting profits—time, labor, weather and materials.



Nestable MULTI PLATE sections come to the job site ready for quick installation by unskilled labor. A simple "twist of the wrist" bolts the pre-curved, corrugated plates into a sturdy, enduring structure. Then you backfill directly against the metal and traffic is ready to roll. No curing, no waste, no delay.




Finishing details can be fitted into a convenient work schedule and full advantage taken of native materials for head and wing walls. Last, but not least, there are no gaps in your work-day calendar. Bad weather is no hindrance to MULTI PLATE construction.



Give yourself a break by using ARMCO MULTI PLATE Pipe or Arches for bridges, stream enclosures, large sewers and special drainage structures. Write for data. Armco Drainage & Metal Products, Inc., and Associated Companies, 3575 Curtis Street, Middletown, Ohio.



**ARMCO MULTI PLATE PIPE AND ARCHES**



# Take a **LOAD** off Your Engines

**D**ON'T let power-stealing by-products of oxidation put an extra load on your heavy-duty gasoline and Diesel engines. Lubricate them with *Texaco Ursa Oil X\*\**. This great oil has extremely high resistance to oxidation, and is both detergent and dispersive.

*Texaco Ursa Oil X\*\** keeps engines clean and holds deposit-forming materials in suspension until drained — assures free rings, better compression and combustion. It reduces engine wear and protects alloy bearings against corrosion. You get greater efficiency, more power — spend less

for fuel and servicing.

To get better performance from air compressors, contractors everywhere give them the effective lubrication of *Texaco Alcaid, Algol or Ursa Oil*. These famous oils assure wide-opening, tight-shutting valves, free rings, continuous air supply, fewer repairs and overhauls.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write:

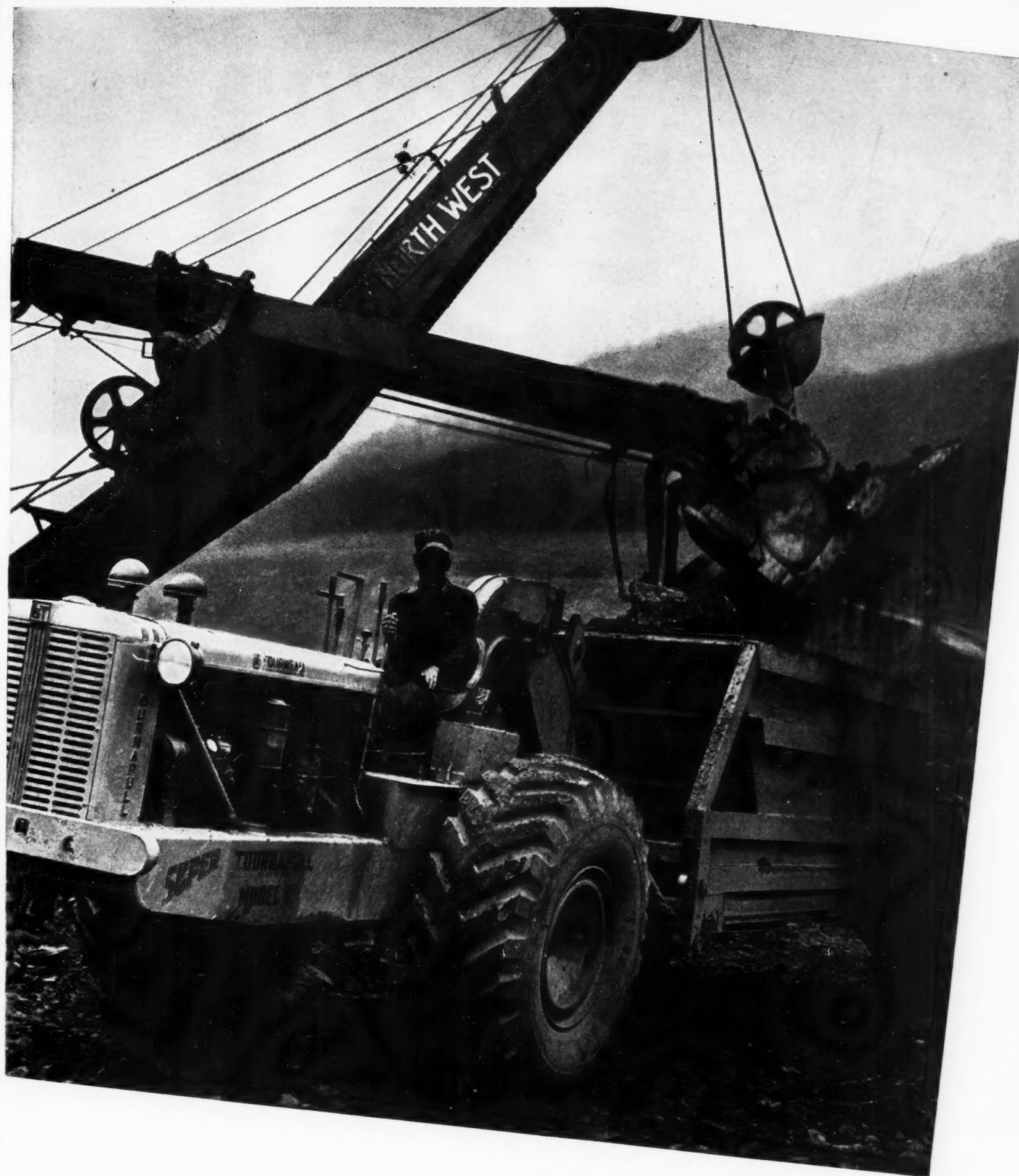
The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN THE  
TEXACO STAR THEATRE  
WITH JAMES MELTON  
EVERY SUNDAY NIGHT  
— CBS



# TEXACO

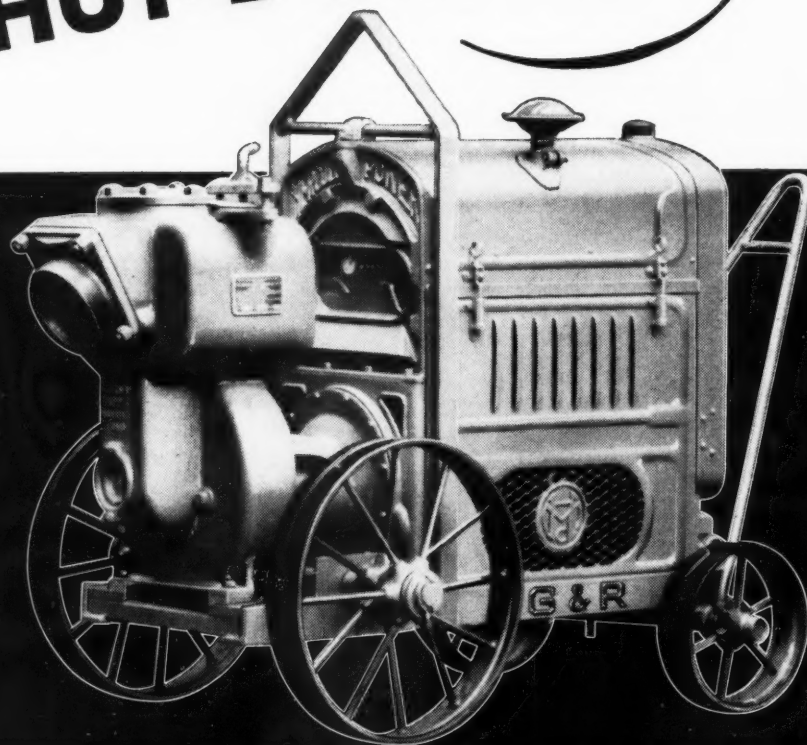




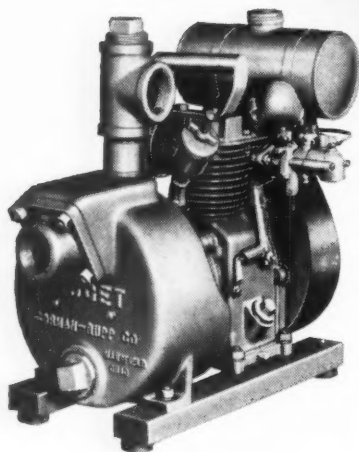
# Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

*Eliminate*  
**COSTLY SHUT-DOWNS**



## **GORMAN-RUPP PUMPS** *Stay "On-the-Job"*



Gorman-Rupp Lightweight Pumps are exceedingly valuable for all kinds of odd jobs where heavy pumps are not necessary or are impracticable. The "Midget" pictured here, the smallest of the lightweights, weighs only 60 lbs. and will pump 3000 G.P.H. at ordinary heads.

Three months continuous runs without shut-downs are common occurrence with Gorman-Rupp self-priming centrifugal pumps. Five years without repair are frequently reported.

The reason for such performance is built into all Gorman-Rupp pumps. It's the simplicity and good design; the streamlined inside construction with no traps or obstructions to stop the free flow of water -- muck and solids will not clog the pump; the greater priming simplicity pays off in more work for less fuel and power. All these and other features make Gorman-Rupp centrifugal pumps the most efficient and trouble free pumps you can buy. They will out-perform and out-live any other comparable equipment.

Write for further information.

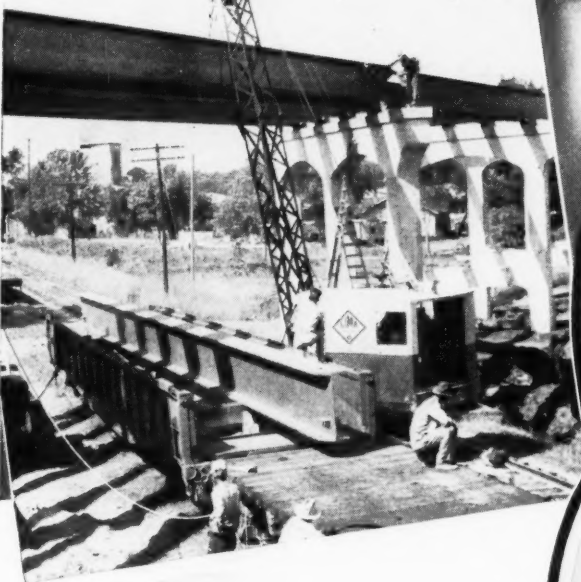


**THE**

**GORMAN-RUPP COMPANY**

308 BOWMAN STREET • MANSFIELD, OHIO





# LIMA *Cranes*

LIMA cranes are in daily use on material handling jobs throughout the entire country. They are used for laying pipe, handling concrete and clamshell buckets, placing cut stone and structural steel, loading and unloading ships, log loading, magnet work and scores of other lifting jobs. Their modern design includes: **INDEPENDENT OPERATIONS** (hoist, swing, travel and boom up or down at the same time), **AIR CONTROLLED CLUTCHES** for easy and accurate control, **LARGE DIAMETER DRUMS** that accommodate long cables and effect maximum cable economy, and **FAST, MOBILE CRAWLERS** that steer from the cab with the cab in any position. LIMA gives you all of these important features—advantages so necessary for profitable crane operation. When you are looking for the most in crane value, why not look into the merits of LIMA cranes? *Bulletins are available on all types and sizes of LIMA cranes, shovels and draglines. Capacities given below.*

LIMA LOCOMOTIVE WORKS, INCORPORATED  
Shovel and Crane Division - - LIMA, OHIO, U.S.A.

Offices In Principal Cities

# LIMA

**SHOVELS**  
3/4 yd. to 5 yds.

**DRAGLINES**  
VARIABLE

**CRANES**  
13 Tons to 100 Tons

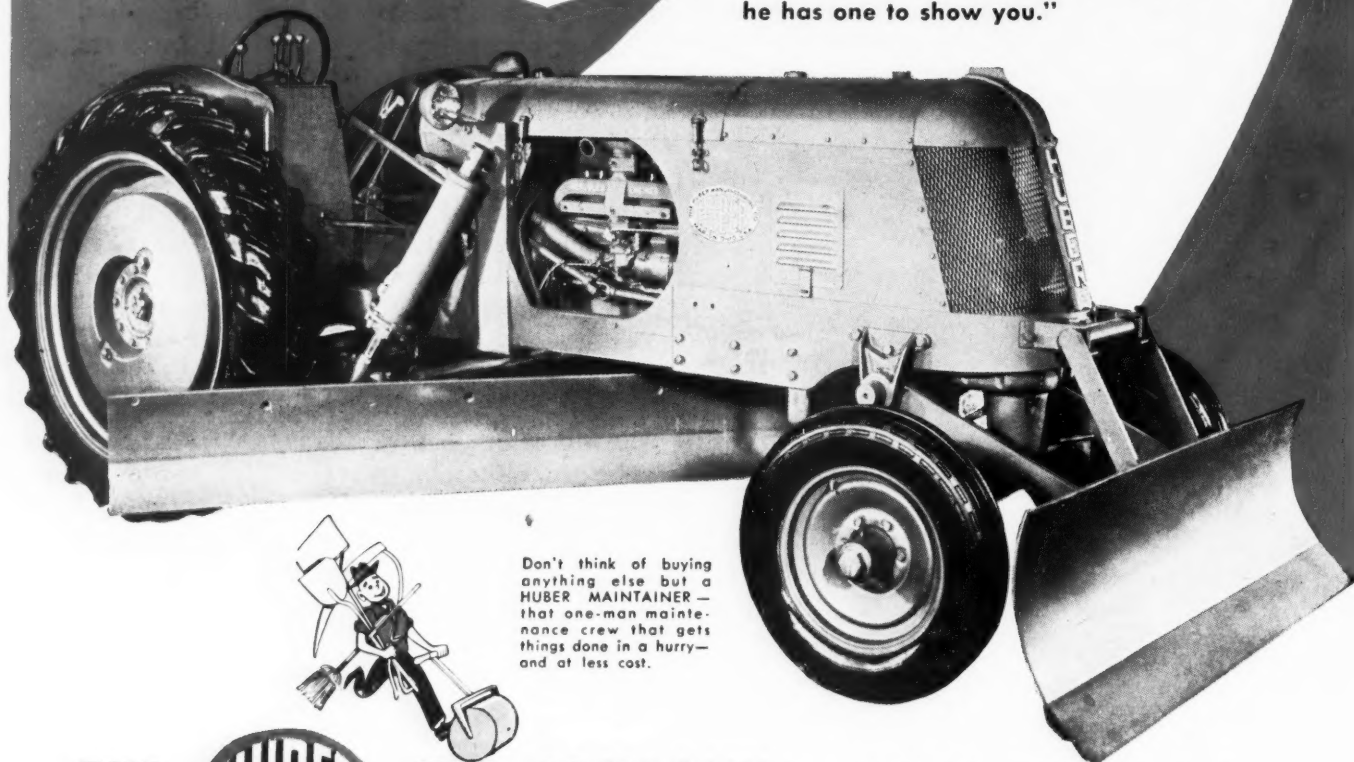


## **I Never Would Have Believed it!**

# **The HUBER Maintainer**



"No, sir! I never would have believed it—but there it was—8 machines in one—ready to go into action at a moment's notice as a mower, or load-lifter, or bulldozer, or scraper, or V-type or one-way snowplow, or rotary broom. I am referring, of course, to that dependable, versatile piece of machinery, the HUBER MAINTAINER, with its many outstanding and important features that does all of these important maintenance jobs for one investment. Tell your local HUBER distributor to call you as soon as he has one to show you."



Don't think of buying anything else but a HUBER MAINTAINER—that one-man maintenance crew that gets things done in a hurry—and at less cost.

THE **HUBER** MFG. COMPANY • MARION, OHIO, U. S. A.

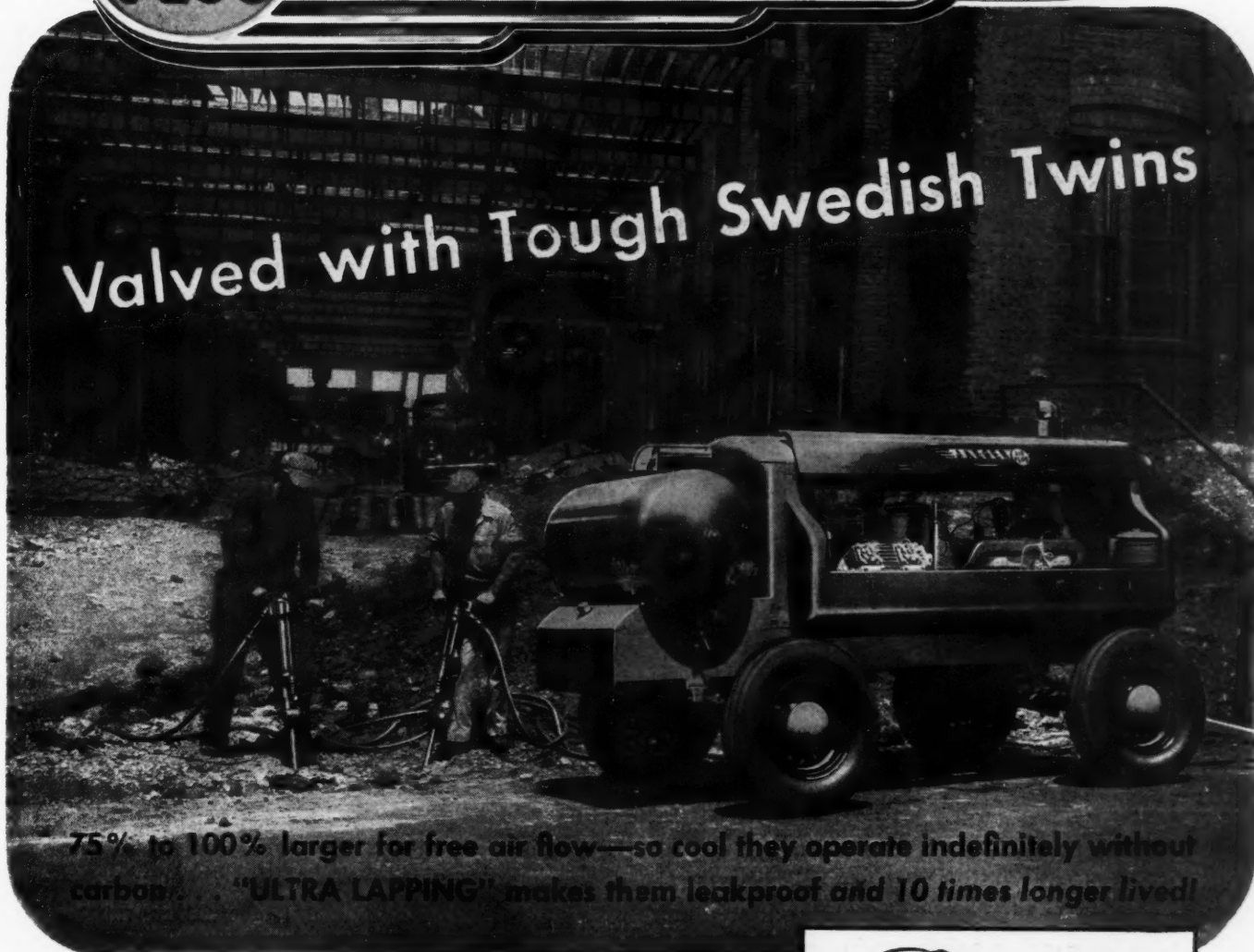
# **HUBER MAINTAINER**

ALSO 3 WHEEL AND TANDEM ROLLERS



# AIR PLUS JAEGER COMPRESSOR

## Valved with Tough Swedish Twins



75% to 100% larger for free air flow—so cool they operate indefinitely without carbon. . . "ULTRA LAPPING" makes them leakproof and 10 times longer lived!

The heart of every "AIR PLUS" Compressor is a set of Swedish Twins . . . steel chosen for its toughness and carefully hardened . . . "ultra lapped" by Jaeger's exclusive process to form perfect seating, leakproof valves and make them 10 times longer lived . . . doubled in size to let the air flow freely, eliminating heat, carbon and power-wasting back pressure, and to operate with lower lift and a resulting minimum of wear. Send for Catalog JC-5. It shows you why compressor users are demanding "AIR PLUS."



TOUGH SWEDISH TWINS

THE JAEGER MACHINE CO., Columbus 16, Ohio

REGIONAL	8 E. 48th St.	226 N. LaSalle St.	235-38 Martin Bldg.
OFFICES:	NEW YORK 17, N. Y.	CHICAGO 1, ILL.	BIRMINGHAM 1, ALA.



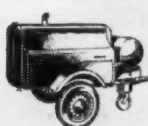
"FLEET-FOOT"  
LOADERS



"SPEEDLINE"  
MIXERS



"SURE-PRIME"  
PUMPS



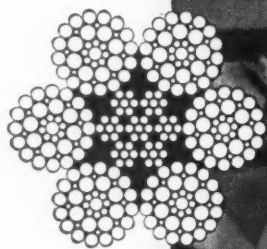
"AIR-PLUS"  
COMPRESSORS

# JAEGER

*Engineered* EQUIPMENT

JAEGER-LAKEWOOD SPREADERS, FINISHERS AND BITUMINOUS PAVERS, FORMS, FORM TAMPERS—"DUAL-MIX" TRUCK MIXERS, AGITATORS—JAEGER HOISTING ENGINES, TOWERS

## Wire rope "architect" at work ... for YOU!



To give the finished product maximum service, safety and economy, Macwhyte Wire Rope is carefully blueprinted by "architects" before any actual manufacturing starts. These men are Macwhyte's highly skilled design engineers.

Such things as size and quality of wires and strands, degree of flexibility, bearing surface, core, etc., must be accurately de-

termined. The engineer's calculations must be perfect to produce a rope in which all parts fit uniformly and work together as a team to best meet operating conditions.

Proper designing is just one example of the thoroughness Macwhyte exercises at every step in planning and producing wire rope. No effort is spared to make it the *correct* rope for your equipment.

*Make Macwhyte your headquarters for Wire Rope and Slings*

## MACWHYTE WIRE ROPE

MACWHYTE COMPANY, 2941 Fourteenth Ave., Kenosha, Wisconsin

Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle  
San Francisco • Los Angeles • Distributors throughout the U. S. A. and other countries

★ ★ ★ ★

MACWHYTE PREformed and Non-PREformed Wire Ropes  
— Internally Lubricated . . . MONARCH WHYTE STRAND  
Wire Rope . . . Special Traction Elevator Rope . . . Braided Wire  
Rope Slings . . . Aircraft Cables, Assemblies and Tie-Rods . . . Stainless  
Steel Wire Rope, Monel Metal Wire Rope,  
Galvanized Wire Rope.



Ask for Macwhyte  
Wire Rope Catalog G-15

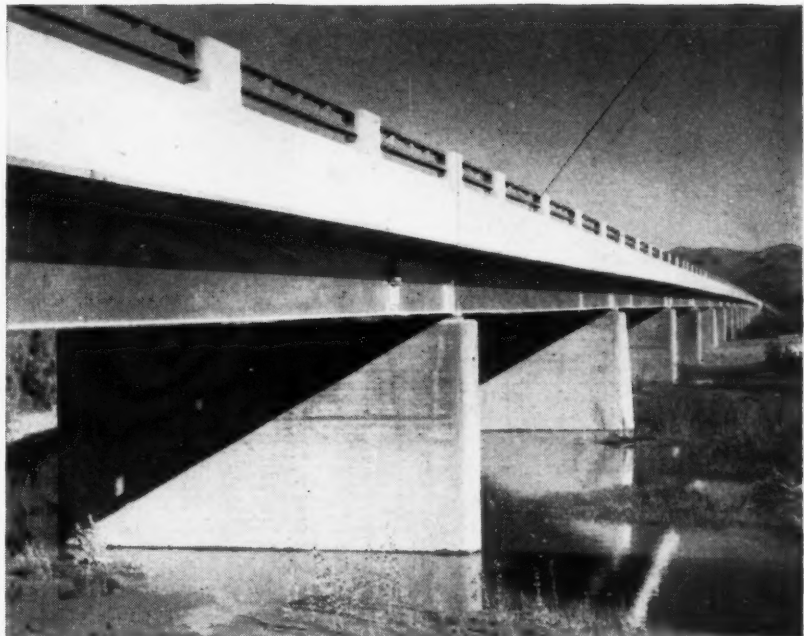
Contains 170 pages of valuable information; lists Macwhyte's complete line. Ask any Macwhyte representative or write Macwhyte Company.



# STEEL for Highway Bridges by BETHLEHEM

What are your needs in highway bridge-building? Whether it's to be an all-steel bridge, or reinforced concrete, or concrete-and-steel, Bethlehem can supply all the steel that the designs require.

Structural steel... reinforcing bars... reinforcing trusses... steel "Battledeck Floor"... single and multiple-strand bridge cable and suspender wire ropes... steel-sheet piling and steel H-piling... these and many other steel products for bridge-building are available through the nearest Bethlehem district office, or through Bethlehem Steel Company, Bethlehem, Pa.



## STEEL SHEET PILING

There are many applications for Bethlehem Steel Sheet Piling in the construction of highway bridges. Use it in temporary cofferdams, in the construction of bridge foundations, and in abutments and retaining walls. This piling is rolled in a wide range of sections, including straight, arch and deep-web, and Z-type sections.

## STEEL H-PILING

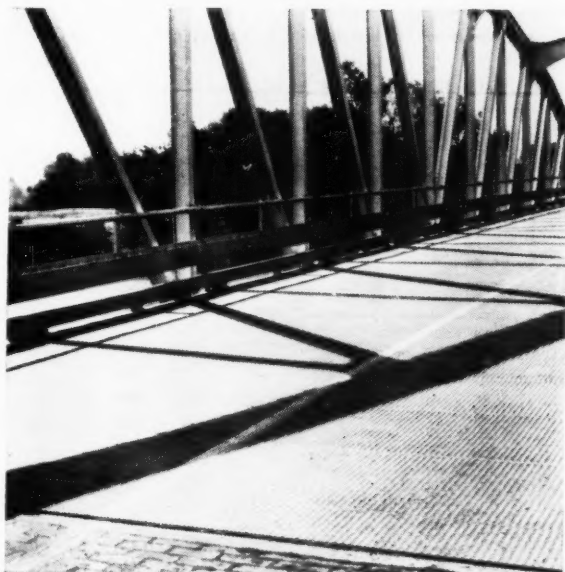
Steel H-Piles have high column strength. They are used to best advantage in locations where they can be driven into hard ground material such as hard-pan or shale or to firm bearing on solid rock. In such cases extremely high bearing capacities can be developed.

Bethlehem Steel H-Piles are special wide-flange structural steel shapes having web and flanges of the same thickness. They are used in bridge foundations in the same manner as other types of bearing piles.

## "BATTLEDECK FLOOR"

Steel "Battledeck Floor" is as light as timber but more durable than concrete. Where traffic is heavy or the bridge span of considerable length, the weight of the flooring will naturally be an important factor in the cost of the steel structure required to carry it. In such cases "Battledeck Floor" should be given full consideration.

"Battledeck Floor" has an advantage over other steel floors designed for lightness in that it is not composed of thin sections. It consists of standard rolled beams, placed lengthwise of the traffic, with a flat plate of substantial thickness welded over these beams. It is therefore assured of a life as long as that of the bridge which supports it.



## Send Today for New Highway Steel Catalog

Bethlehem's new illustrated catalog, "Steel for Highways," gives complete information about Bethlehem road-steel products. Send for a copy today. Ask for Catalog 191, and address the nearest Bethlehem district office, or Bethlehem Steel Company, Bethlehem, Pa.



# "Nothing but **TOURNAPULLS** as cheap or as fast as



High speed Tournapulls kept job running well ahead of tough production schedule all through tough New Jersey winter.

**7** veteran Tournapulls move 70% of 360,000 yard job for Monmouth Park Jockey Club, Long Branch, New Jersey . . . beat shut-down winter weather . . . performance draws praise from pleased owners.

R. W. Cleveland and Co., East Orange, New Jersey, used 7 Tournapulls to move major part of 360,000 cubic yards of earth under winter weather conditions that kept material alternately saturated or frozen. Constant rain made haul roads quagmires . . . rigs worked in mud to Scraper hubs in all kinds of weather.

Big heaping loads were the rule but high voids in wet lumpy and frozen material cut winter pay loads to 10 pay yards.



## **TOURNAPULLS** lick tough winter conditions

Four Tournapulls started job in December. In February, 3 more were added. Working under grueling job conditions, these rigs maintained a high production pace during all the bad weather from December to April. In the worst of cold weather, when Tournapulls loaded material frozen solid 8" deep, they double-headed pushers, found the Tournapulls, all veterans of previous jobs, stood up even to this rugged going.

## **7 loads per 50-minute hour on 2400' cycle**

On a 1200-ft. one-way haul Tournapulls got 10 pay yards of high void material in 50 seconds,

After completion of grading, Cleveland used Tournapulls to do the finish work, surfacing tracks and landscaping.




**FOR LOWEST NET COST PER YARD**



# could have moved dirt it was done on this job"

*say Roy and Robert Cleveland*



Pictures taken in April show "summer" job conditions... this was rough and frozen or hub-deep going through most of the winter.


85 feet, delivered 7 loads per 50-minute hour. Material was partly clay and wet but patented tailgate kept bowls clean. Contractor's production records showed a day-in-and-day-out actual average of 50 trips per unit every 8 hours on 2800-ft. round-trip haul.

## **Only one day lost on one machine in 429 machine days worked**

Out of 75 days worked by 4 machines and 43 days by the other 3, a total of 429 machine days, only one day was lost on one machine for mechanical trouble. High-speed Tournapull production, ability to stay on job during shut-down

weather, rugged construction which held downtime to the minimum, proved Tournapull ability to deliver lowest-net-cost-per-yard under roughest work conditions. Rigs' performance pleased Cleveland brothers and brought enthusiastic comments from other contractors who visited the job.

Like R. W. Cleveland and Co., you will find that Tournapulls' big load capacity, high-speed haul and giant rubber-tired flotation mean top production, lower costs for you. Tournapulls are working on jobs near you. Watch them! And ask your LeTourneau Distributor to show you job-proved production estimates on your next job.



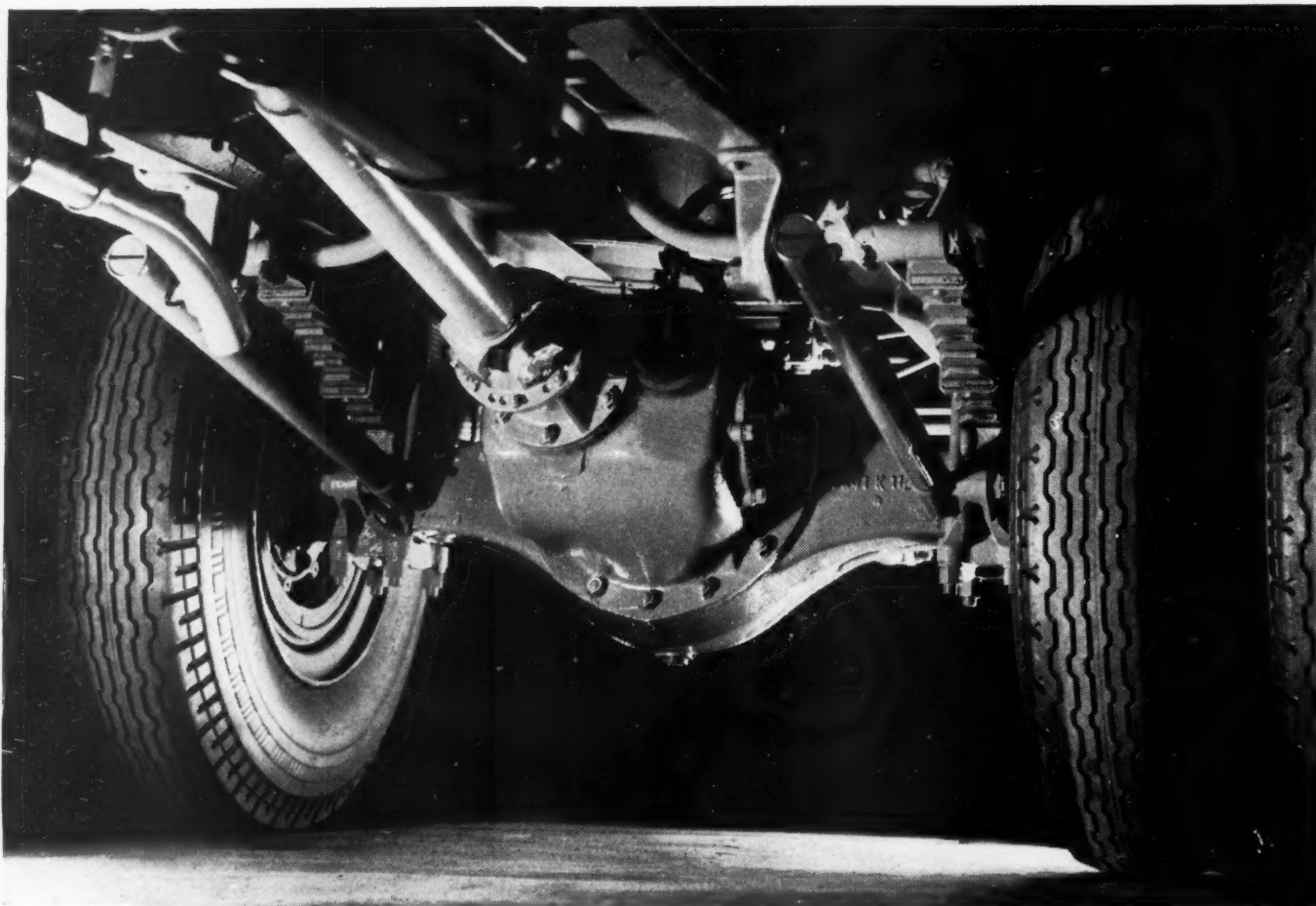
No regular haul roads were established... Tournapulls worked all over the place, traveling from here to there by the shortest route.

**LETOURNEAU**  
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA



**TOURNAPULLS**

Trade Name Reg. U.S. Pat. Off. 650



Wise truck buyers' view of today's most modern heavy-duty two-speed axle—the new Timken S or U-300 with Easy Power

Shift. "S" Series is designed for hauling over 18,000 pounds at the tires on ground per axle, "U" Series for even greater loads.

## The most important view of your new truck

IF YOU are getting a new heavy-duty truck, it would pay you to take this view of it. Then ask yourself, "Is the rear axle right for the job?"

The *right* axle can mean a profitable hauling operation—the wrong one can be very costly.

Two new heavy-duty axles perfected by Timken now make it easy to solve heavy-duty axle problems. The new S & U-200 *Single-Speed Double-Reduction* Axles and the new S & U-300 *Two-Speed Double-Reduction* Axles with built-in Timken Easy Power Shift will do things for your hauling operation *never before possible*.

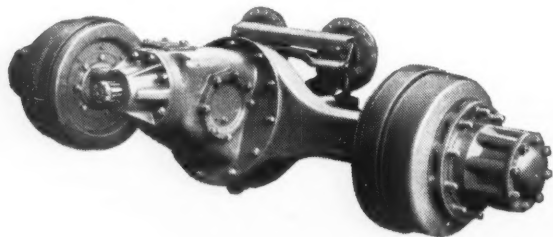
For example, you can select the right type of final drive for the job the truck is to do. Both drives are

*interchangeable in the same axle housing using the same axle shafts.*

You can select the right brakes for the job—either Timken "P" Series Power Brakes or "DP" Series Hydraulic Brakes.

Regardless of which combination you select, you'll have the most modern heavy-duty axle on the market today, with Timken's exclusive Advanced-Related Design—the greatest engineering advance in the axle industry.

Why not get all the facts *now*. Write for a copy of our new folder. Specify Timken Axles and Brakes under your new trucks.



New S & U-200 Single-Speed Double-Reduction Axle offers every modern feature. New hypoid-helical double-reduction drive . . . new differential with 9-16 tooth combination . . . new, stronger shaft design and stronger splines . . . new interjacent pinion shaft location . . . plus scores of other features. Data on ALUMINUM housing, brake shoes and hubs on "S" Series for weight saving available upon request.

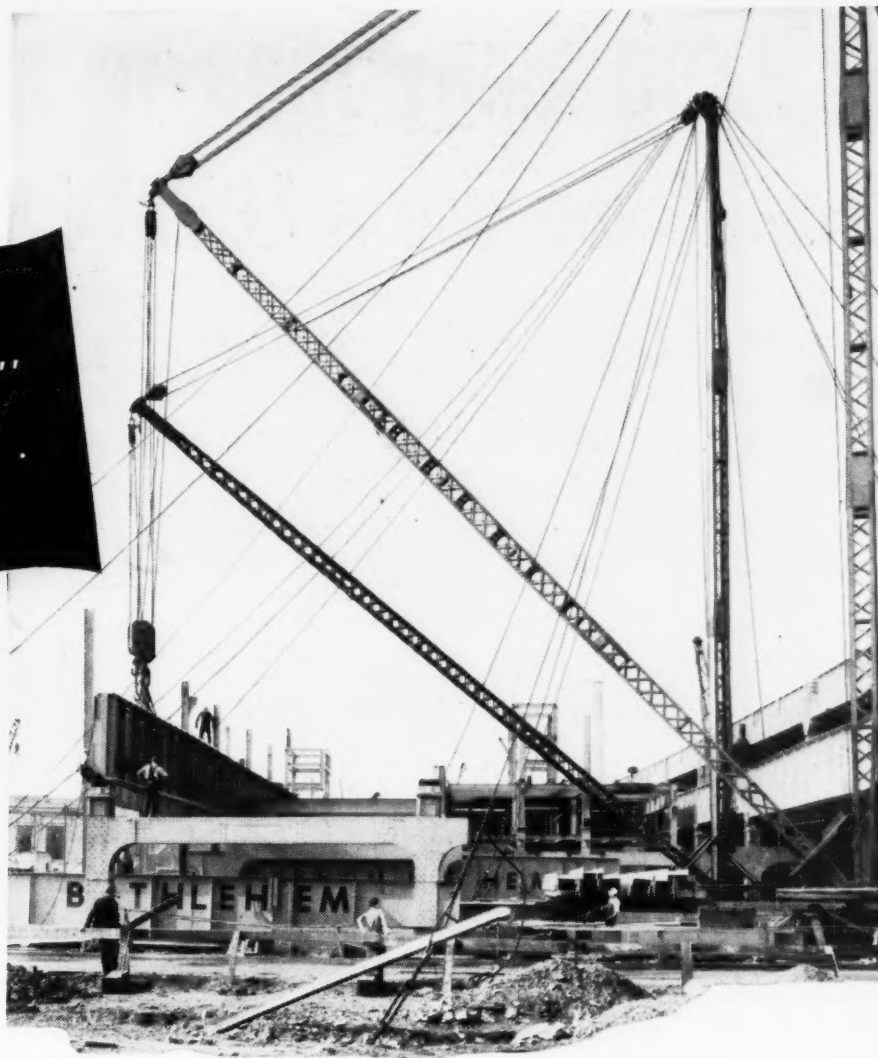


# TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO. DETROIT 32, MICH.  
WISCONSIN AXLE DIVISION • OSHKOSH, WIS.  
TIMKEN AXLE BRAKE DIVISION • DETROIT 32, MICH.



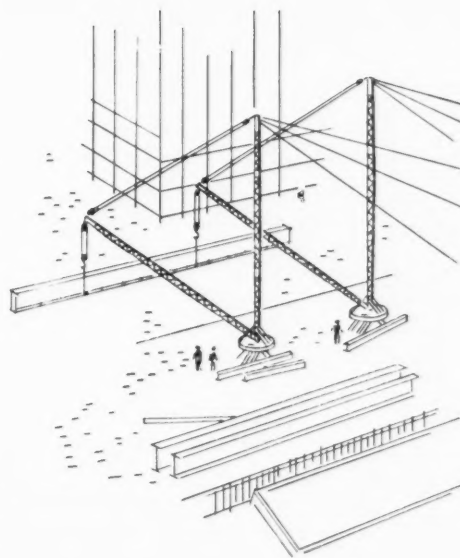
THE RIGHT "GUY"  
FOR THE JOB . . .



For safe, low-cost setting of steel and other construction work, choose "American" Guy Derricks. Their flexibility, ease of set-up and simplicity are real assets on any job.

And few—perhaps no other—derricks have so much to offer in the way of safety and durability.

"American's" global experience in the past 60 years covers all types of derrick jobs. This is your assurance of dealing with engineers who have a complete understanding of the best design and use of any type of derrick. "American" application experts stand ready to help you get the right derrick for any job. Write for Catalog C-1.



# AMERICAN

## HOIST & DERRICK CO.

St. Paul 1, Minnesota

CHICAGO

NEW YORK

SAN FRANCISCO



REVOLVERS

LOCOMOTIVE CRANES

HOISTS

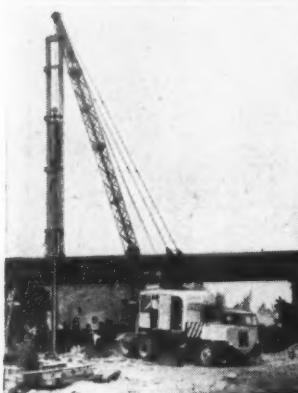
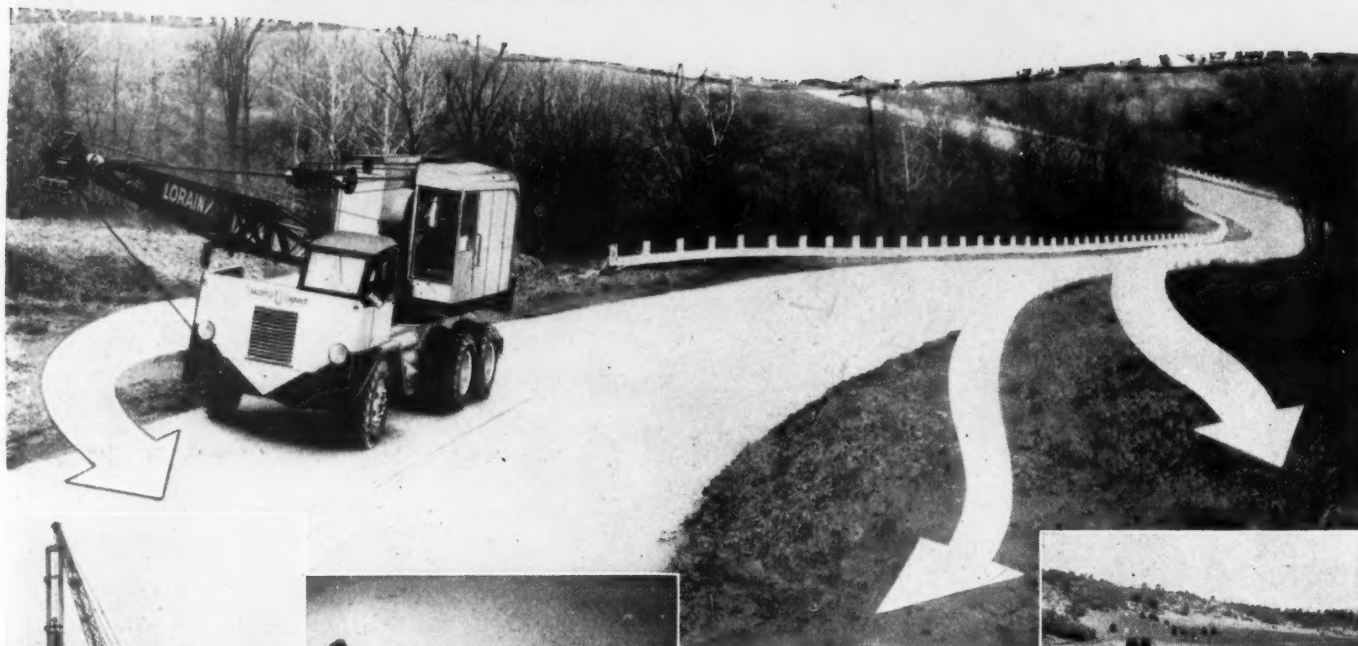
DERRICKS

BLOCKS AND SHEAVES

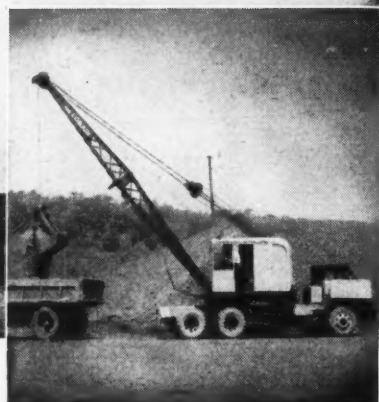
CROSBY CLIPS

# TOO MANY JOBS TO BE DONE?

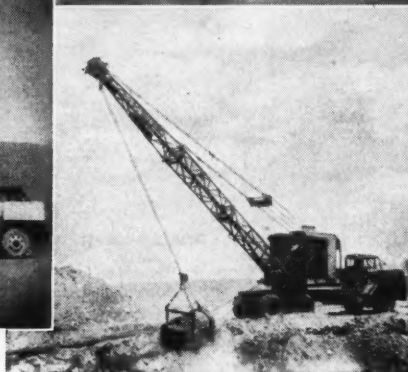
## Not if you use a LORAIN MOTO-CRANE!



Pile Driver



Clamshell



Dragline



Shovel

**I**S it a case of too many jobs or too little mobility? With *one* Moto-Crane you can cover many different kinds of jobs in widely separated areas speedily, smoothly and at a saving.

Moto-Crane mobility makes it independent of all other forms of transportation. Soft ground flotation and high tractive effort give off-the-road travelability that gets this unit to the job whether there's a road or not. When finished it takes off for the next job under its own power over hard roads at speeds up to 31 m.p.h. Its uses are legion — general excavation, car unloading, steel erecting, ditching, bin charging, pile driving, etc.

Put a Moto-Crane to work and *mobilize* those scattered jobs into one efficient operation. There is a wide range of models and capacities to choose from mounted on 4 or 6 wheel units with or without front wheel drive. Ask your local Lorain distributor for complete Moto-Crane information today.



The new 20-ton 6-wheel drive Moto-Crane.



The 2-speed crawler-mounted Lorain



The 20-ton rubber-tired, Self-Propelled Crane.

Reg. Trade Mark  
**thew. Lorain**

THE  
THEW SHOVEL CO.  
Lorain, Ohio

**CRANES • SHOVELS • DRAGLINES • MOTO-CRANES**

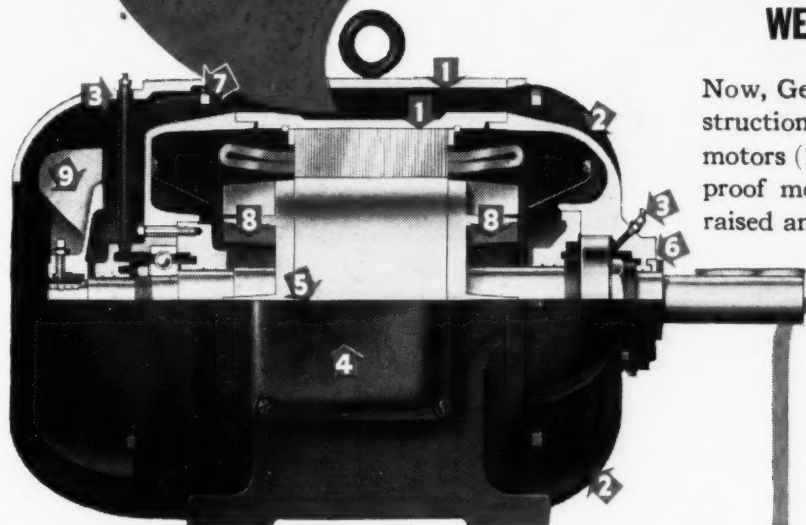


# A DOUBLE WALL

## *Keeps trouble out*

**NEW TRI-CLAD TOTALLY ENCLOSED MOTOR  
IS MORE FULLY PROTECTED FROM DUST, DIRT,  
WEATHER, OR WHAT-HAVE-YOU . . .**

Now, General Electric has applied Tri-Clad construction to its line of totally enclosed induction motors (1 to 1000 hp) and to most of its explosion-proof motors as well. *Extra protection* has been raised another notch.



### FOR EXTRA-SEVERE JOBS

Applications amid dust, metal filings, coolants, or corrosive agents, where totally enclosed motors have always been required, will now have the benefit of a stronger armor, plus convenience features that simplify installation and servicing.

### FOR EXTRA-WET LOCATIONS

Indoors or out, these Tri-Clad totally enclosed motors will take hoseings or heavy rains without danger of shut-down. The cast-iron frame is strongly resistant to rust and corrosion.

### FOR EXTRA LONG LIFE

Many motor users are making the totally enclosed motor their standard for *all* jobs—based on evidence of long-term savings. This new member of the Tri-Clad line makes this decision more logical than ever.

### HAZARDOUS ATMOSPHERES

"Companion motors" to the standard Tri-Clad totally enclosed, the new explosion-proof and dust-explosion-proof types are tested and listed by Underwriters' Laboratories for Class I Groups C and D, and Class II Group E, F, and G.

## THESE 9 POINTS

of new strength and serviceability put  
this Tri-Clad totally enclosed motor way  
ahead

1. A cast-iron, double-wall frame that completely encloses windings and punchings
2. Ribbed cast-iron end shields, machined to provide a tight seal, yet easily removed
3. Well proved pressure-relief greasing systems which can be packed with a long-life lubricant where advisable
4. Cast-iron conduit box diagonally split for wiring convenience (independently explosion-proof on explosion-proof motors)
5. Leads are sealed in a nonshrinking compound at the point where they emerge from frame
6. Rotating, labyrinth seal prevents infiltration of grit or liquids
7. Large, free-flowing, easy-to-clean air passages protect parts from accumulation of dust and foreign matter
8. Modern "ageless" insulation treatment includes Formex<sup>®</sup> magnet wire
9. Powerful external fan is removable, simplifying maintenance. (Nonsparking type for explosion-proof motors.)

**AND IN ADDITION**  
—compactness and short length promote ease of handling and installation.

\*Trade-mark Reg. U.S. Pat. Off.



# GENERAL ELECTRIC

750-257C-8058

### FOR THE COMPLETE STORY

#### GENERAL ELECTRIC COMPANY

Apparatus Dept., Schenectady 5, N. Y.

Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motor.

Please send me GEA-4131, "Motors and Control for Hazardous Locations."

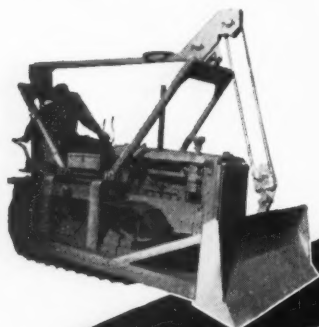
Name

Company

Address

3893

BULLDOZERS & TRAILBUILDERS



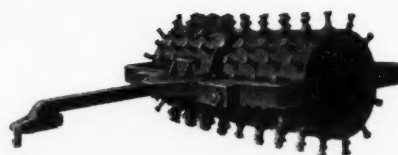
LOADERS



RIPPERS

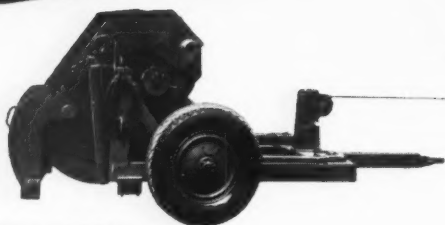


TAMPERS

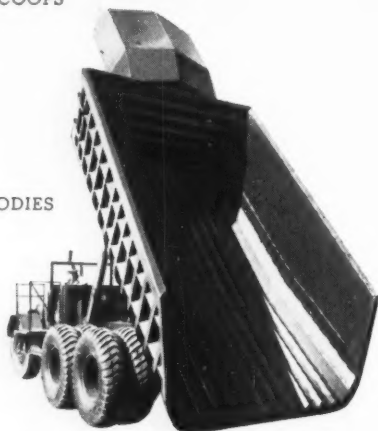


# SOUTHWEST Construction Equipment *for every job!*

HAULING SCOOPS



DUMP BODIES



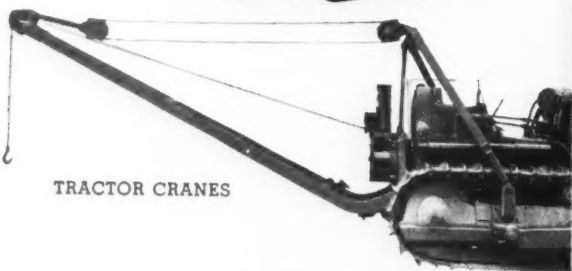
Southwest's complete, standardized line affords construction men an opportunity to fill their needs from one dependable source. From start to finish, no matter whether Allis-Chalmers, Caterpillar, International or Cletrac tractors are used, an economical Southwest unit is available to bring you increased profits.

In addition to the standard line, special Southwest Dump Wagons, Tampers, Heavy Duty Compaction Units, etc., are giving outstanding performance on out-of-the-ordinary jobs all over the country . . . Why not let Southwest help solve YOUR problems?

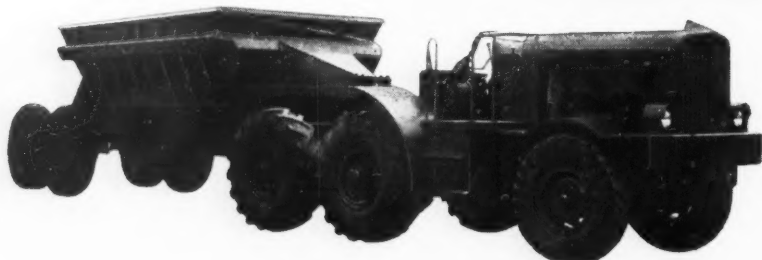
POWER CONTROL  
UNITS



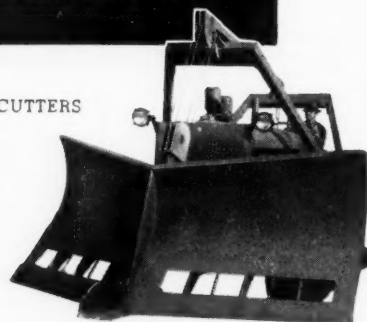
TRACTOR CRANES



BOTTOM DUMP WAGONS



BRUSHCUTTERS



CONSTRUCTION MACHINERY DIVISION  
**Southwest Welding &  
Manufacturing Company**  
ALHAMBRA, CALIFORNIA





# 18 years of Service...and Still Going strong! MONOTUBE Foundation Piles

**I**N 1928 the first tapered steel Monotube foundation piles were installed on one complete bent of a Wheeling and Lake Erie Railroad trestle bridge. Last month Union Metal engineers made a thorough inspection of that first Monotube piling job. They found it in excellent condition—*ready to serve for years to come*—and brought in the un-retouched photo at the top of this page to prove their point.

Today, job-wise engineers and contractors are using thousands of Monotubes for the construction of bridges, highways, under-

passes and buildings.

Monotubes are light in weight, easy to handle, simple to install. They can be driven with average job equipment . . . extended easily on the job. They permit quick, thorough inspection because of their hollow, tubular construction.

For friendly cooperation, call on our engineers to help you with your planning. They'll show you why Monotube's low cost, easy handling and integrity make them preferred in foundation construction. Union Metal Manufacturing Co., Canton 5, Ohio.

**UNION METAL**  
*Monotube Foundation Piles*

# "CONTROLLED TRACTION"



CONTROLLED TRACTION involves steering the rear wheels, and angling the frame, until the combination of rear wheels pushing behind the toe of the blade, front wheels pulling ahead of the heel of the blade, and blade practically at right angles to the frame in its angled position, *balances the load*, and makes it easy for the "99-M" to move straight ahead with a blade load that would either stall an ordinary Motor Grader, or cause it to slide sideways.

CONTROLLED TRACTION is another reason why no Motor Grader without All-Wheel Drive and All-Wheel Steer can hope to equal the all-around performance of the "99-M"

**AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.**

BUILDERS OF ROAD MACHINERY  
**Austin Western**  
SINCE 1859



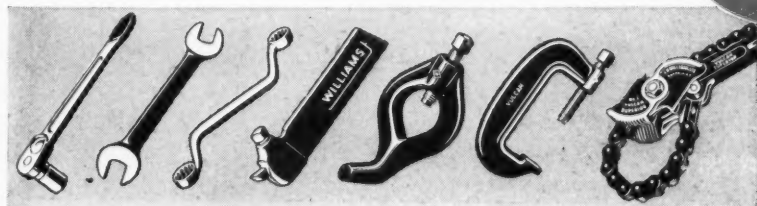


● Williams "Superior" Wrenches are drop-forged from a selected grade of carbon steel and processed to exacting specifications. They are substantially twice as strong as the earlier carbon steel wrenches of our own manufacture. Comparative tests show that these wrenches average 93% as strong as our corresponding alloy steel wrenches costing approximately twice as much.

Most industrial users find Williams "Superior" Wrenches their logical choice considering both strength and economy. "Superior" Wrenches are made in 50 patterns . . . more than 1,000 sizes, and are sold by Industrial Distributors everywhere.

J. H. WILLIAMS & CO., BUFFALO 7, N. Y

**WILLIAMS**  
DROP-FORGINGS AND  
DROP-FORGED TOOLS





## America's Most Complete Line of Material Handling Buckets

*All purpose -*

- **SHOVEL**
- **PULLSHOVEL**
- **DRAGLINE**
- **CLAMSHELL**

• FRONTS, BOTTOMS, SCOOPS and TEETH are 14% manganese steel developing tensile strength up to 120,000 p. s. i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

On the 1/2 yd. and 3/4 yd. Shovel, Pullshovel, and Dragline Buckets, all teeth are interchangeable — a great advantage to operators.

### *Experience Counts*

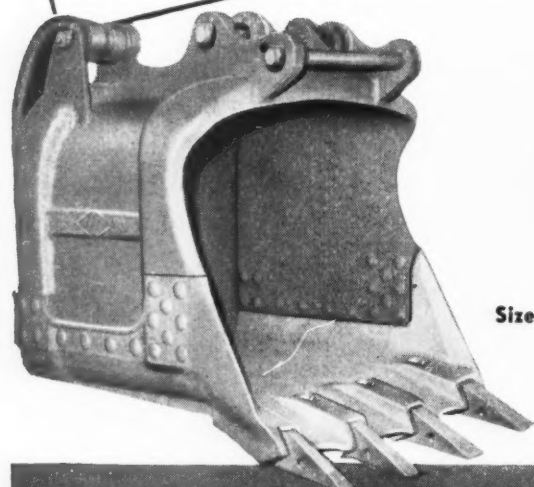
See your shovel man or equipment dealer about PMCO Buckets and Dippers.



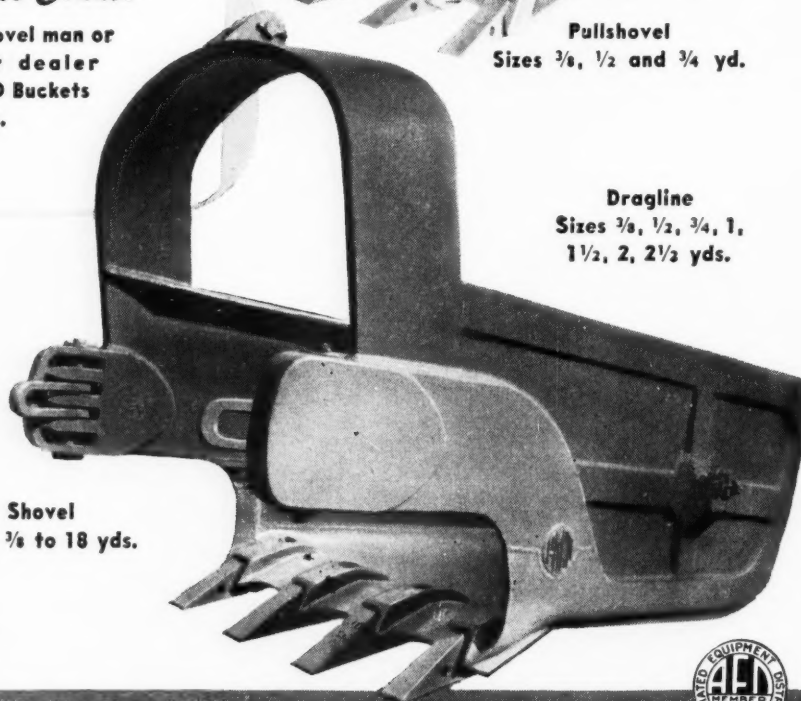
**Clamshell**  
Sizes 3/8, 1/2, 3/4, 1,  
1 1/2, 2 yds.



**Pullshovel**  
Sizes 3/8, 1/2 and 3/4 yd.



**Shovel**  
Sizes 3/8 to 18 yds.



**Dragline**  
Sizes 3/8, 1/2, 3/4, 1,  
1 1/2, 2, 2 1/2 yds.

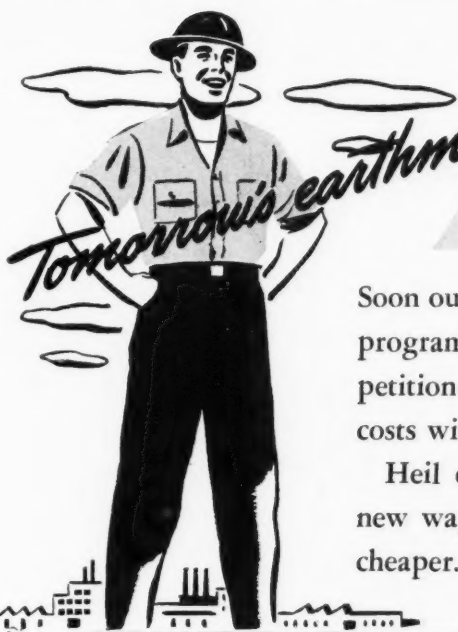
"Quality Since 1880"

# PETTIBONE MULLIKEN CORP.

CHICAGO 51,  
U. S. A.

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES.





Soon our huge national road-building program will be in full swing. Competition for jobs will be keener — costs will have to be lower.

Heil engineers have always found new ways of moving dirt faster and cheaper. It meant pioneering which

built up a tremendous backlog of experience. This "know-how" is your assurance that the new Heil earthmoving equipment of tomorrow will be the last word. Let's look at a few Heil cost-cutting developments that have been proven in world-wide service.

#### EXCLUSIVE HEIL DEVELOPMENTS



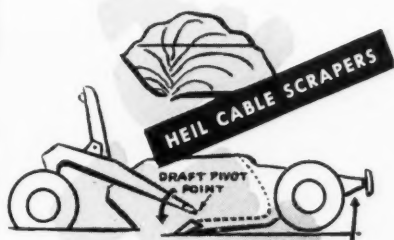
means full hydraulic steering — it is not a booster. Even in heavy going or on rough construction roads, this compact, reliable unit provides passenger-

car steering for powerful Heil Hi-Speed Tractors. Such easy handling reduces operator fatigue — it is responsible for faster trips and lower costs.



are the only wagons that have side-opening dump doors. Opened by cable, these doors work on the clam shell principle. They close by gravity and hold the load tightly because of their balance on the

trunnions, their interlocking gears, and the cross-locking, shock-plate hooks—the cables are slack. Since these doors swing up out of the way, they can't drag. Dumping is faster and maintenance costs lower.



have many unique features. The bowl design is different. It permits the loading of 15% more material in the same length of time with the same drawbar horse power—there are no voids. The draft point is located behind and above the cutting blade, for better digging.

When the blade encounters resistance, the rear wheels tend to raise, producing a leverage action that forces the blade into the ground. The digging ability of Heil Cable Scrapers, the larger loads they carry, and their fast dumping action mean greater profits.

Heil has many new developments to offer. When your time comes to buy new earthmoving equipment, bank on Heil experience and engineering facilities. You will speed up your jobs, have less trouble, and make more money.

R-72

## THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN



# Keep 'em on the Job...

# with CORRECT LUBRICATION



A VITAL factor in keeping equipment available for continuous service is correct lubrication of *every part of the vehicle*. Failure of the smallest part—due to deficient lubrication—may put the entire machine in the shop . . . and shop time is non-revenue time.

Sinclair All-Point lubrication can be your guard against equipment lay-off. Sinclair lubricants are made for *specific* service at every individual point . . . to help keep machines moving.

Try . . . OPALINE MOTOR OIL for sure, safe engine lubrication . . . non-foaming OPALINE GEAR LUBRICANT with extreme pressure properties to prevent galling and scuffing . . . OPALINE CHASSIS LUBRICANT for stay-put protection in all weather . . . SINCOLUBE for assured, enduring wheel bearing lubrication.

Let these tested lubricants help keep your equipment available . . . regularly and economically . . . always.

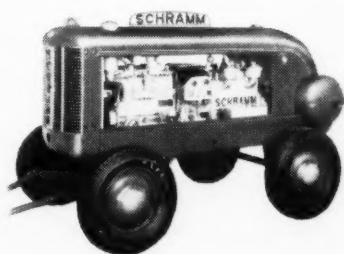
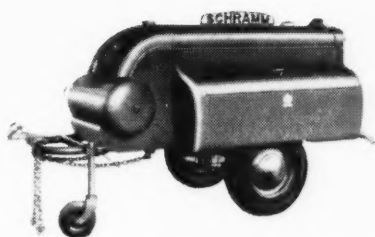
## SINCLAIR LUBRICANTS-FUELS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

SCHRAMM IS THE PLANT...



## WHERE YOUR VERSATILE AIR COMPRESSOR COMES FROM!



The big Schramm Plant, with greatly increased facilities, furnishes air compressors to all industries. That represents thousands of Schramm Compressors, portable and stationary, now being used for every type of compressed air job.

Illustrated are two Schramm models. These units... as all Schramm Compressors... are lightweight, compact, rugged. They contain such features as 100% watercooled, mechanical intake valve, forced feed lubrication.

Schramm Compressors are modern to meet modern needs. Facilities, workmanship, knowledge, all go into the manufacturing of each Schramm, and it is for these reasons you get real savings when you use a Schramm Air Compressor.

For complete details, write us today.

# SCHRAMM INC.

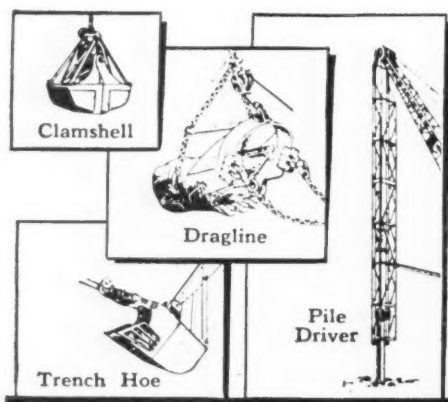
**THE COMPRESSOR PEOPLE**  
**WEST CHESTER**  
**PENNSYLVANIA**

# CONNECTICUT'S ROUTE 12

*"Goes Straight"*

With the Help  
of this  
**LINK-BELT SPEEDER  
K-370**

"Shovel Work" is only one of the profit-making features of every Link-Belt Speeder Shovel-Crane. The quick, easy convertibility from one front-end attachment to another, gives the owner virtually six different machines, and the chance to bid on a wide variety of jobs!



Road work gets under way in many spots throughout the country . . . a step toward our national goal of expanded highway facilities. Here is a state highway in Connecticut being relocated to eliminate curves — moving 44,000 yards of rock and earth in a little over half a mile. "Speed-O-Matic" full hydraulic control on this Link-Belt Speeder K-370 gives the operator effortless "finger-tip" handling, enabling him to maintain full capacity right up to the last minute of a 9½ hour day.

10,403

For Prompt, Efficient, Convenient Sales and Service:  
There is a Link-Belt Speeder Distributor Located Near You

## LINK-BELT SPEEDER

*Builders of the Most Complete Line of*  
**SHOVELS-CRANES-DAGLINES**  
LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO 9, ILL.  
(A DIVISION OF LINK-BELT COMPANY)

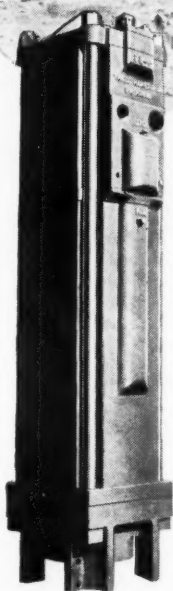


# HOW "C-DAYS" \* HELPED SPEED "VE-DAY"



(\*Construction Days)

McKiernan-Terry 9B3  
Pile Hammer used in  
constructing a vital  
Rhine River bridge

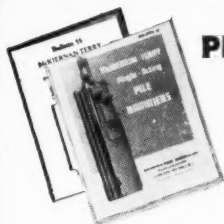


Construction, involving repairs and rebuilding of ports, dams, bridges, HAD to be speedy, substantial, safe for the advance of the Allied forces . . . And it WAS so — due to the skill, ingenuity and bravery of the U. S. Army Engineers, Seabees and other front line construction forces.

During those critical "C-Days," McKiernan-Terry Pile Hammers did their share of the driving of millions of piles for foundation work, maintaining their long pre-war reputation for power, sturdiness and dependability under strenuous wartime operating conditions.

These qualities, fundamental in war, equally important in post-war construction, can help you, too, make records for speedy, substantial, safe construction jobs. The expanded facilities of two large McKiernan-Terry plants at Dover and Harrison, New Jersey, offer prompt service on deliveries of double-acting and single-acting pile hammers, as well as many types of hoisting and marine auxiliary equipment and specially designed and engineered machinery.

MK-1001



## PILE HAMMER BULLETINS

FREE

Send for Bulletin No. 55 on Double-Acting Hammers and Extractors and Bulletin No. 57 on the new line of Single-Acting Hammers—the only single-acting pile hammers that will operate under water.

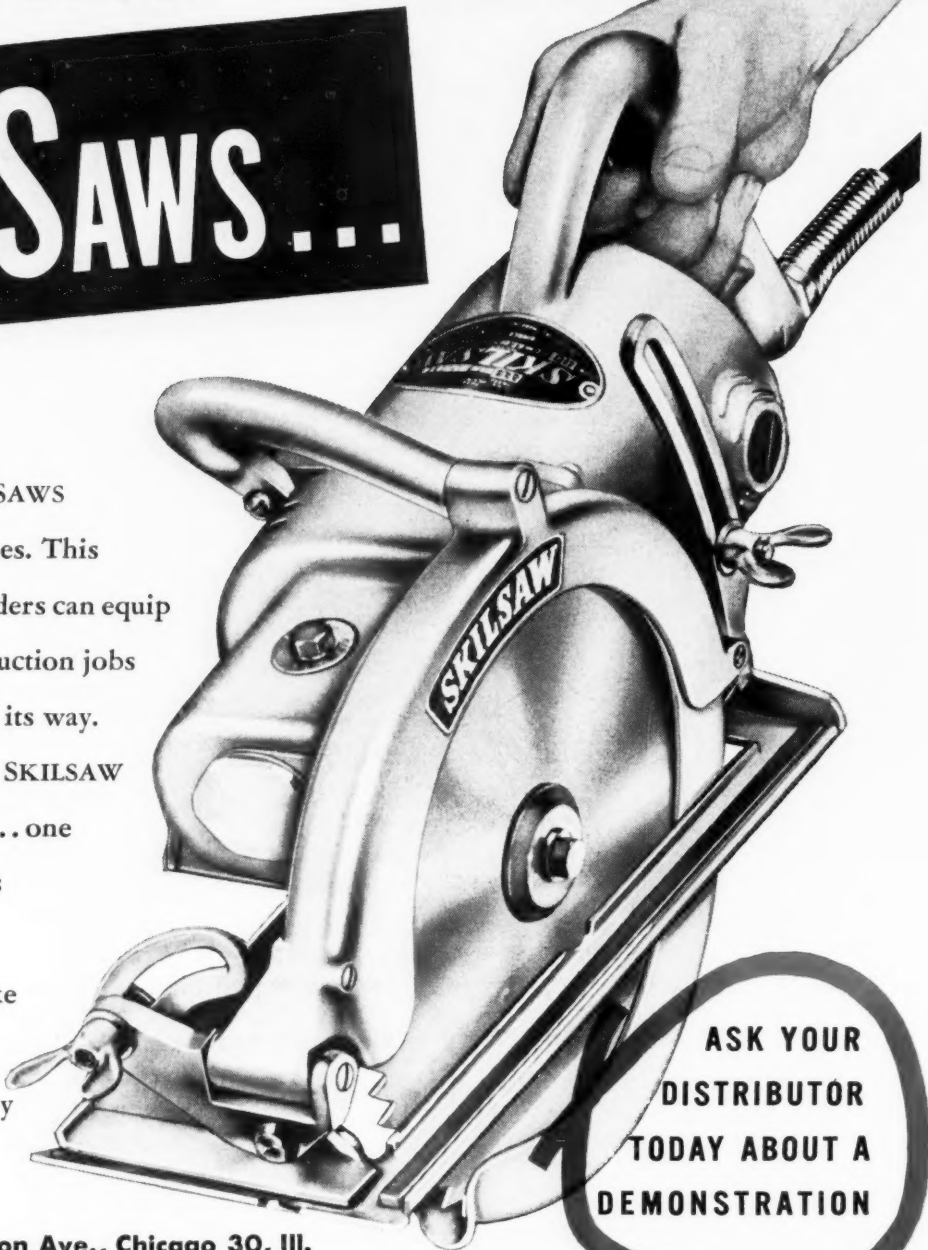
**McKiernan-Terry**  
**CORPORATION**  
Manufacturing Engineers  
14 PARK ROW NEW YORK 7, N. Y.

# INCREASING PRODUCTION

of

# SKILSAWS...

• More and more SKILSAWS are rolling off the assembly lines. This means that more and more builders can equip now for more profitable construction jobs in the building boom that's on its way. Remember . . . one man with a SKILSAW equals 10 men with hand saws . . . one man using a SKILSAW releases 9 other men for other work. You can bid lower and still make more money when you use fast-working SKILSAW on every cut in construction.



ASK YOUR  
DISTRIBUTOR  
TODAY ABOUT A  
DEMONSTRATION

**SKILSAW, INC., 5033-43 Elston Ave., Chicago 30, Ill.**  
*Factory Branches in All Principal Cities*

**PORTABLE ELECTRIC**  
**SKILTOOLS**  
**MADE BY SKILSAW, INC.**

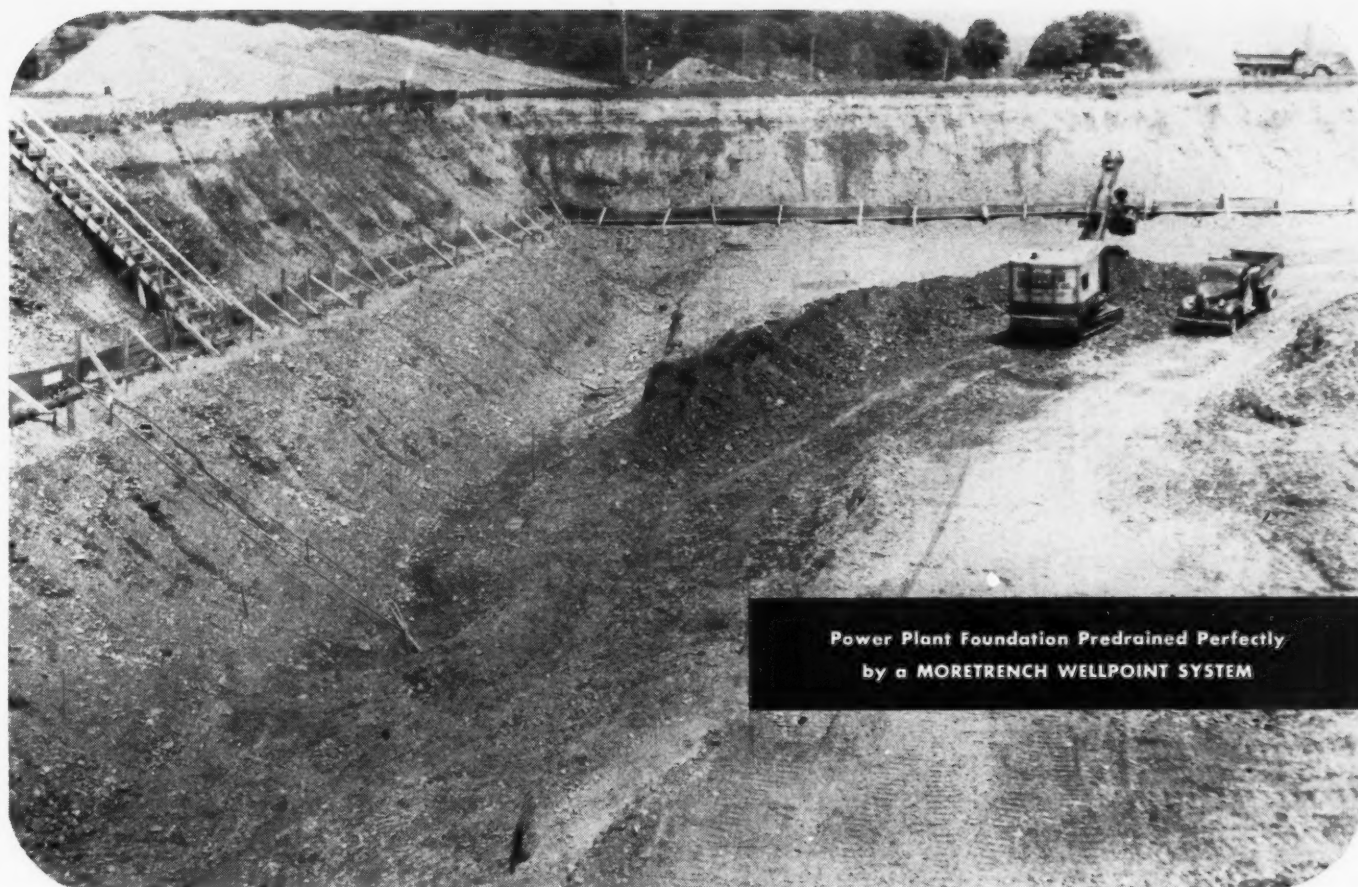
SKILSAWS

SKILSANDERS

SKILNIBBLER

SKILGRINDERS

SKILDRILLS



Power Plant Foundation Predrained Perfectly  
by a MORETRENCH WELLPOINT SYSTEM

## *Dewatering by* **MORETRENCH**

That means solving the water problem in the quickest, most efficient,  
most economical way known.

Figuring a wet job? Get our estimate and plan on doing it "in the  
dry" with Moretrench Wellpoint Equipment.

*Catalog on request.*

## **MORETRENCH CORPORATION**

90 WEST STREET, NEW YORK 6  
ROCKAWAY, NEW JERSEY

HOUSTON 8, TEX.  
315 W. 25th St.

TAMPA 6, FLA.  
2424 Chicago Ave.

CHICAGO 23, ILL.  
3037 So. Christiana Ave.



# The Case of the DANCING DOLLS



## —Or How ATLAS ROCKMASTER Reduces Vibration While It Also Increases Shovel Production

A coal stripping operation in the midwest caused serious complaints from neighbors when the overburden was shot. In a nearby country store, the vibration was especially objectionable. Every time a shot was made, a string of novelty dolls in the window danced furiously, and sometimes fell to the floor.

When the Atlas Rockmaster blasting system was introduced in this coal pit, complaints ceased. And the dolls stopped dancing, too, giving visible evidence that vibration had been substantially reduced.

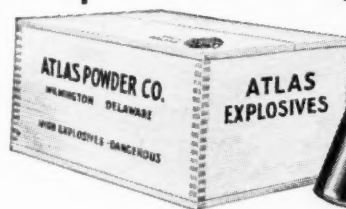
This case history, characteristic of many, is just one example of how Atlas Rockmaster blasting system has been used to reduce complaints about blasting. In addition, the new and better control of blasting definitely gives increased rock breakage in many types of operations, with resulting increased shovel efficiency.

Atlas does not claim that Rockmaster is the answer to every blasting problem. But with your knowledge of the job, and our knowledge of explosives, Rockmaster can very probably save you time and trouble. Call in the Atlas Representative.

"ROCKMASTER"—Trade Mark

## THE GREATER SAFETY OF ATLAS MANASITE DETONATORS

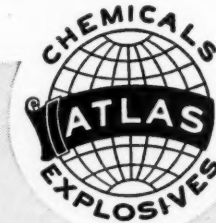
Remember, the Atlas Rockmaster Blasting System also incorporates Atlas Manasite. This means decreased sensitivity to impact and friction—no sacrifice of efficiency but less chance of accident!



# ATLAS

## EXPLOSIVES

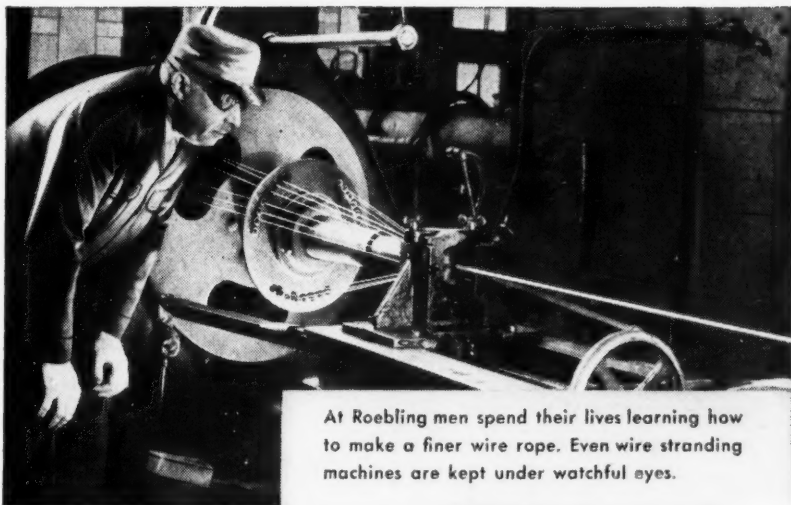
"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

On any job: NOTHING SERVES LIKE

# *the right Wire Rope*



At Roebling men spend their lives learning how to make a finer wire rope. Even wire stranding machines are kept under watchful eyes.



This extra care plus complete knowledge of rope making produce the wire rope that gives you extra service on the job.

TO GET THE BEST SERVICE... the most life from your wire rope, it's important to use the *right* rope for the job. You need the correct balance of strength and flexibility, plus the peak in fatigue and abrasion resistance. In the wide range of sizes and types of Roebling "Blue Center" Steel Wire Rope there is one that meets your exacting requirements.

Your local Roebling field engineer will be glad to help you specify the *right* wire rope—preformed or non-preformed—to give you the most service for the least cost. Call or write our nearest branch office.

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities



Wire Rope and Strand • Fittings • Slings • Cold Rolled Strip • Round and Shaped Wire • Aerial Wire Rope Systems • Wire Cloth and Netting Suspension Bridges and Cables • High and Low Carbon Acid and Basic Open Hearth Steels • Aircord, Swaged Terminals and Assemblies • Electrical Wires and Cables

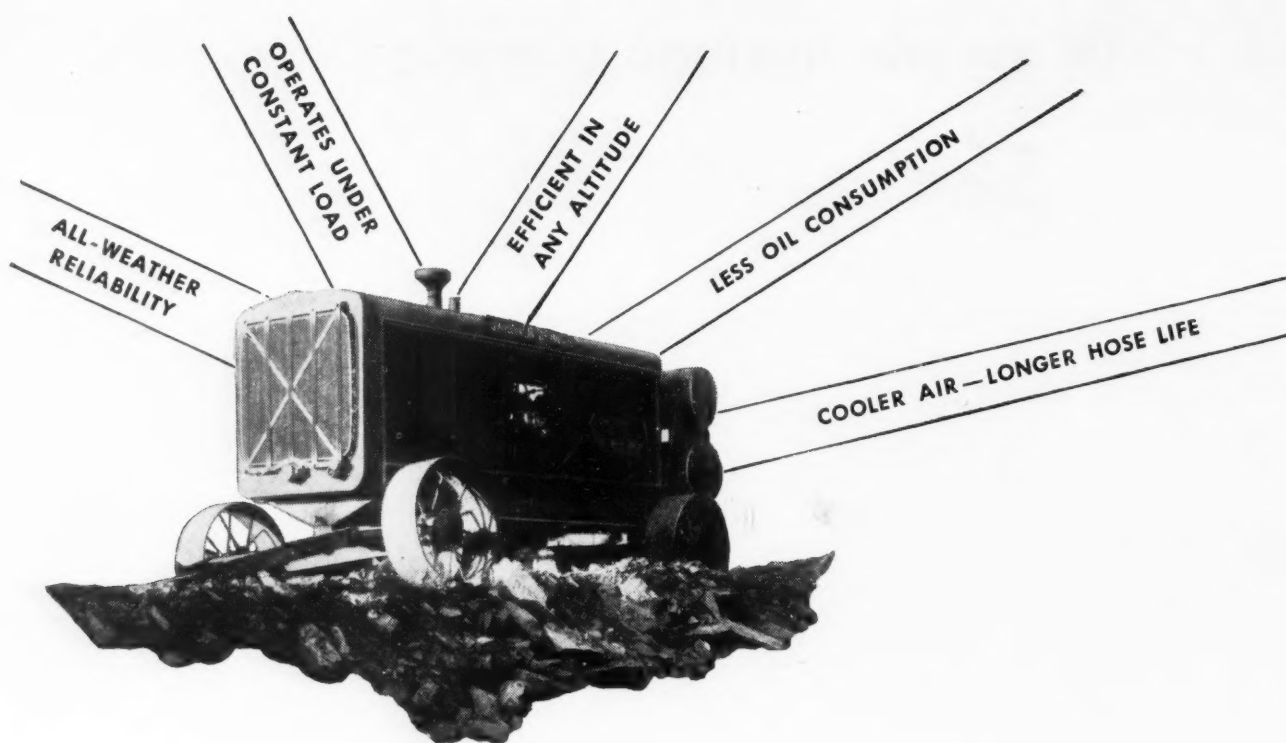
OLD MAN COMPETITION SAYS,  
"Choose the rope that stretches the  
time between costly shutdowns."



PREFORMED • NON-PREFORMED

# ROEBLING

PACEMAKER IN WIRE PRODUCTS



## Add in these Operating Savings with a Gardner-Denver *All Water-Cooled Portable!*

When you buy a Gardner-Denver All Water-Cooled Portable Compressor, you are buying long-term savings that can add up to a sizable sum on your jobs.

You are buying proved ability to do the work in any season—at any altitude—anywhere.

You are protecting yourself against costly delays and interruptions by assuring a constant and adequate supply of air at all times.

You are buying *cooler* air—and that means less lubricating oil consumption and longer hose life. In other words, you are getting the finest portable your money can buy—a portable with *completely* water-jacketed cylinders.

For complete information about Gardner-Denver Portables, write Gardner-Denver Company, Quincy, Illinois.



**GARDNER-DENVER**  
Since 1859





# SMOOTH PERFORMANCE

--- Easy on the Operator

--- Easy on the Machine

The quiet, easily controlled, coordinated performance of Bucyrus-Erie excavators results in greater output because it means less operator fatigue, less wear on the machine itself. The operator, working with easily manipulated responsive controls, finds it easy to keep a Bucyrus-Erie working at top speed without becoming excessively fatigued . . . without experiencing the end-of-shift slow downs that cut output. Smooth performance means more consistently efficient machine effort, too. It means that the operator gets full use of engine power all through the shift because losses due to friction and vibration are tremendously reduced. It means

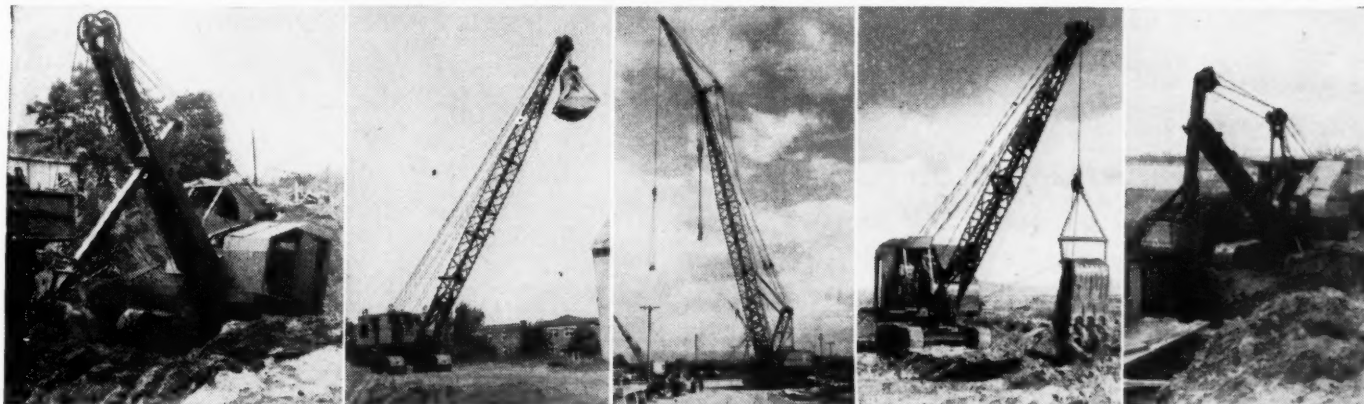
that maintenance requirements are lower because it indicates accurately machined close-fitting parts held in lasting alignment and operating with the smoothness that cuts wear to a minimum. Yes, quiet coordinated performance is a big reason why Bucyrus-Eries consistently outproduce other machines. Check with men who have operated Bucyrus-Eries, or watch one at work yourself. You'll be convinced that Bucyrus-Eries are your best bet for big output. BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin.

45E45



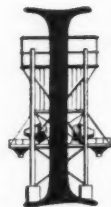
*Fully Convertible —  $\frac{3}{8}$  to  $2\frac{1}{2}$  Cu. Yards*

**SHOVELS, CLAMSHELLS, CRANES, DRAGLINES, DRAGSHOVELS**



## IN YOUR PROCUREMENT OF EQUIPMENT

### *The First Step Is The Plan*



IN THIS DAY OF SHORTAGES AND DELIVERY DISAPPOINTMENTS, PROCUREMENT OF EQUIPMENT DEMANDS THE MOST INTELLIGENT APPROACH . . . THE UTMOST COORDINATION OF EFFORT AND A COMPLETE UNDERSTANDING OF THE DETAILED SPECIFICATIONS INVOLVED.

*IN OTHER WORDS,—THE FIRST STEP IS A CAREFULLY ENGINEERED DESIGN,  
—FITTED TO LOCATION AND PRODUCTION REQUIREMENTS.*



LIKE ALL MANUFACTURERS TODAY, THE PRODUCTION FACILITIES OF THE BUTLER BIN COMPANY

ARE UNDER A TREMENDOUS OVERLOAD. BUTLER ENGINEERS, HOWEVER, ARE READY TO LEND YOU THEIR FULL COOPERATION IN DEVELOPING THAT FIRST ESSENTIAL STEP,—THE PLAN . . . WHILE IT IS UNFORTUNATE THAT SITUATIONS OF UNPRECEDENTED COMPLEXITY MUST TAX THE PATIENCE OF THE BUYER, NEVERTHELESS, BUTLER URGES YOU NOW TO PREPARE YOUR EQUIPMENT PLANS IN COMPLETE DETAIL AND TO PLACE YOUR ORDER SO THAT YOU WILL HAVE THE ADVANTAGE OF DELIVERY WITHOUT ADDITIONAL DELAY WHEN PRODUCTION SCHEDULES PERMIT. SO BE SURE TO CONSULT WITH BUTLER ENGINEERS,—AND TAKE FULL ADVANTAGE OF BUTLER ENGINEERED DESIGN.

**BUTLER BIN CO.**  
**WAUKESHA, WISCONSIN**

**CUT HOURS TO MINUTES...**

# ATKINS *Chain Saw*



**SQUARE OR MITRE HEAVY TIMBERS  
IN A FRACTION OF THE  
TIME REQUIRED FOR  
HAND SAWING**

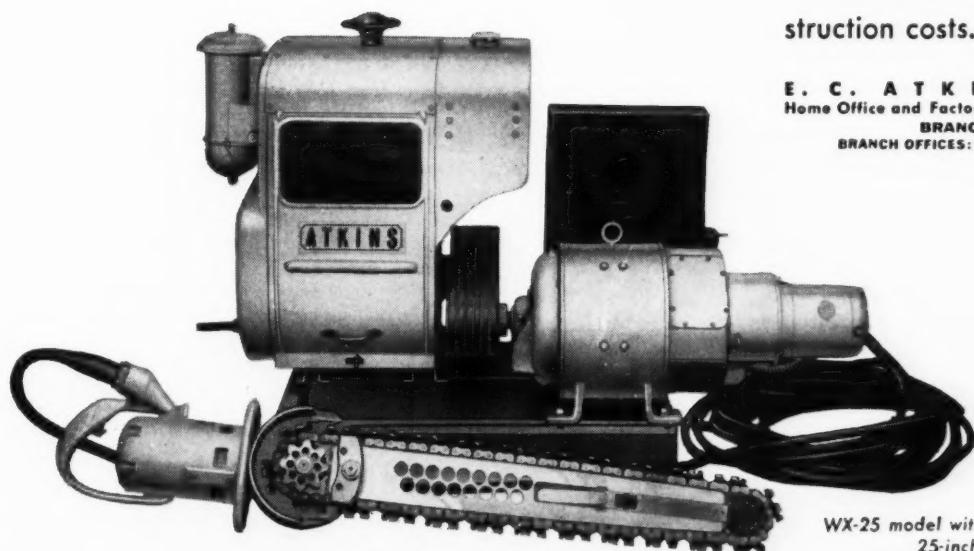
## **Ideal for Easy One-Man Sawing**

Heavy construction material such as piling, logs, bracing timbers and planking fall easy prey to this modern sawing device.

Light enough for one-man operation, this Atkins WX-25 Chain Saw will cross cut or mitre any kind of timber or lumber. It cuts the time on heavy sawing jobs to minutes, adding critical man hours to the working day.

The self-contained, compact power plant can be mounted on skids or wheels and is easily portable. The cutter bar unit with power head weighs only 52 pounds. Write today for the Atkins Chain Saw Bulletin to learn how you can lower your current construction costs.

**E. C. ATKINS AND COMPANY**  
Home Office and Factory: 402 South Illinois Street, Indianapolis 9, Indiana  
**BRANCH FACTORY: Portland, Oregon**  
**BRANCH OFFICES:** Atlanta • Chicago • Memphis • New Orleans  
New York • San Francisco

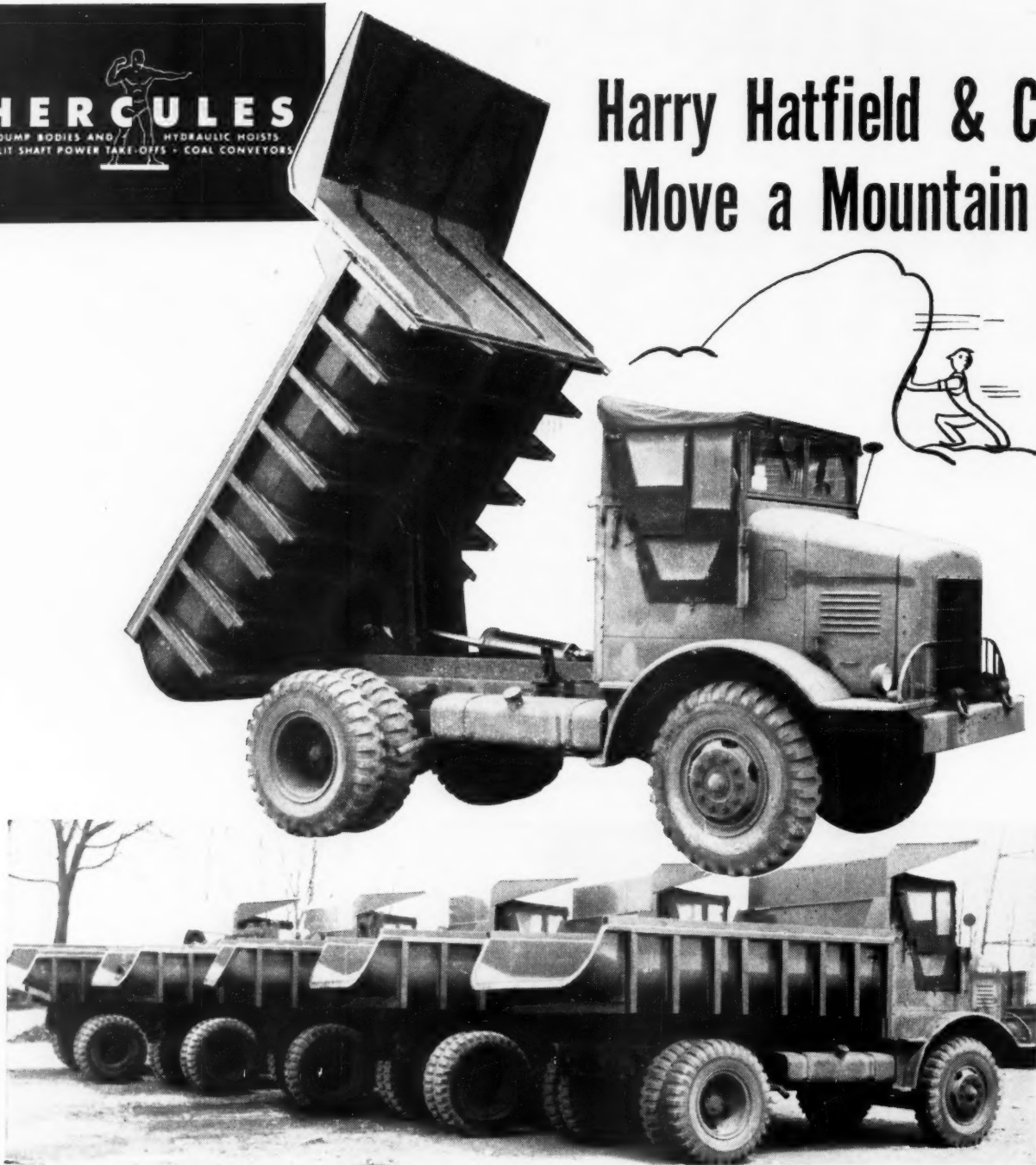


WX-25 model with 5 H. P. power head and  
25-inch BA cutter bar





## Harry Hatfield & Co. Move a Mountain!



600,000 cubic yards of stone—enough to make a mountain of respectable size—is being moved in ten of these Hercules Rock Body dump units, owned and operated by the Harry Hatfield Co., Barboursville, West Virginia. Moving a mountain is no easy task, and Mr. Hatfield will need all the help he can find.

And he'll get plenty of help from these sturdy Hercules Rock Bodies! Built-in stamina, the result of years of design and manufacturing experience, will enable these

units to stand up under the punishing task of hauling heavy loads over irregular, rough terrain. When the job is done, they'll be ready for more heavy-duty service!

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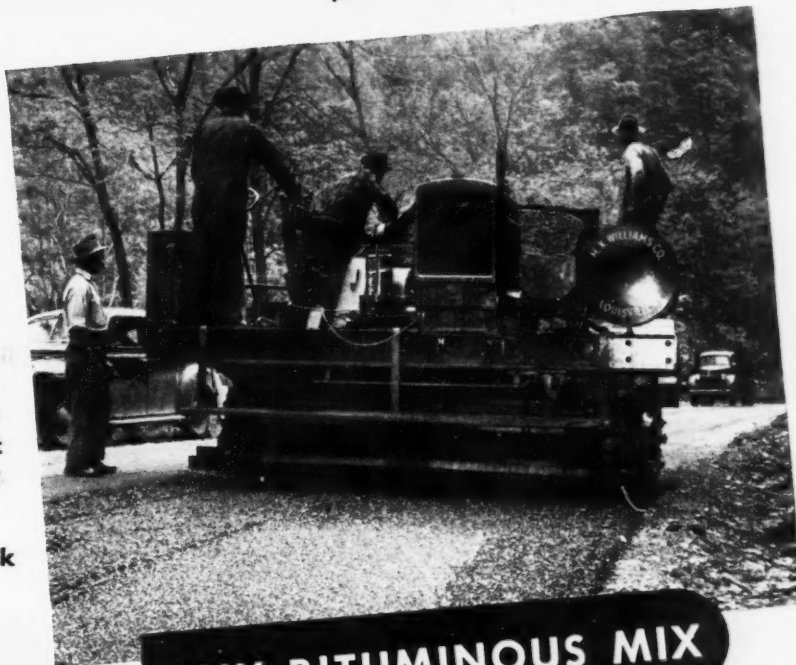
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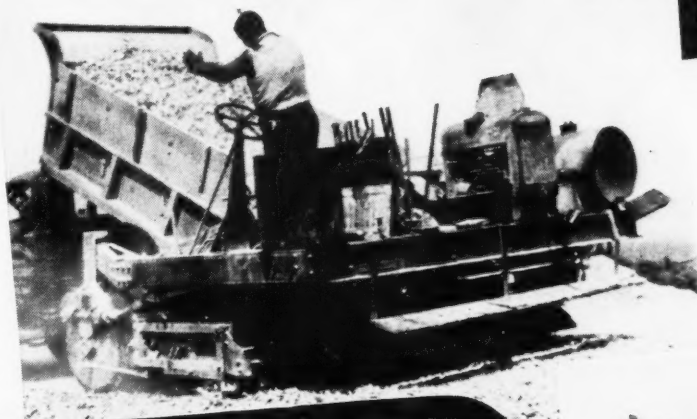
**THE FOOTE COMPANY, INC.**

State Street Nunda, New York



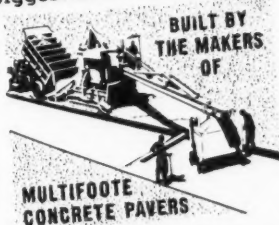
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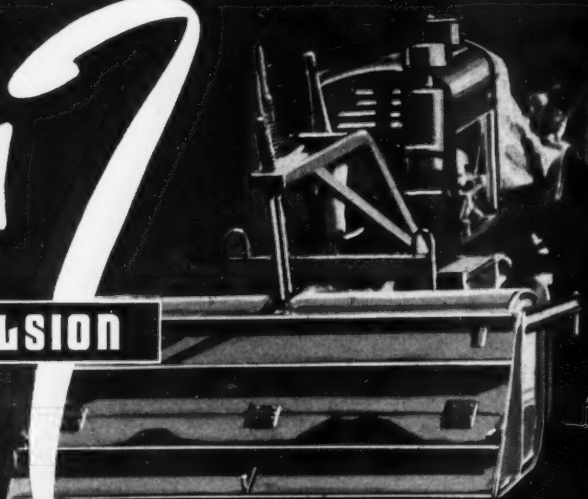
# Mixing?

**ASPHALT**

**ASPHALT EMULSION**

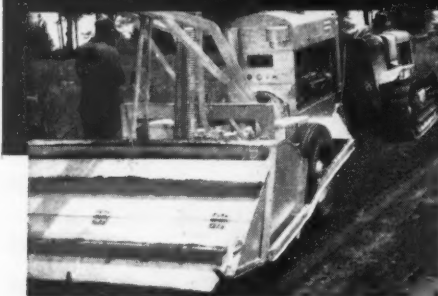
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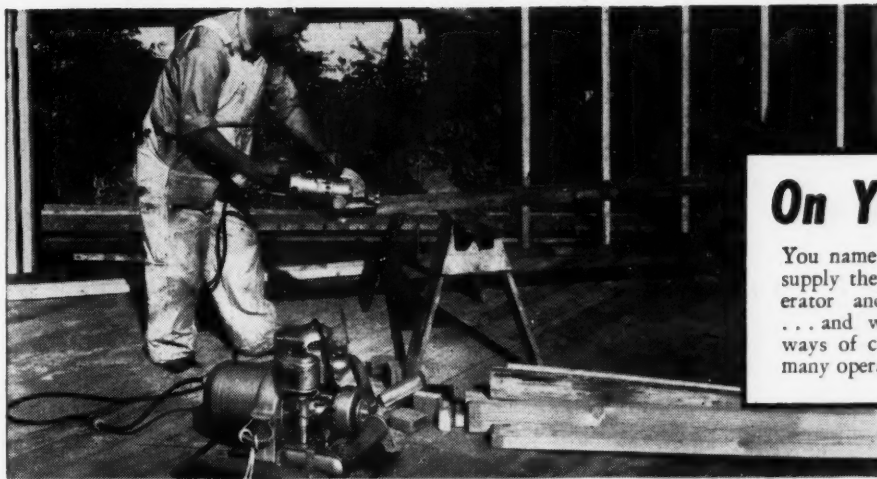
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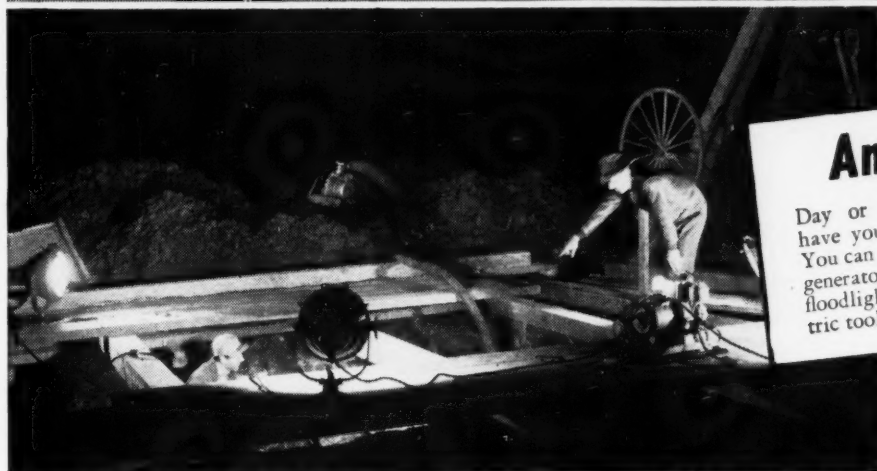


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\*The Lewis & Frisinger Co., E. B. Schwaderer, and Julius Porath & Son Co., combined equipment to complete the grading contract on the new Canton-Akron Memorial Airport ahead of schedule. When completed, this airport will have three asphalt-paved runways, each 5,600 ft. long and 150 ft. wide, and connecting taxi lanes.



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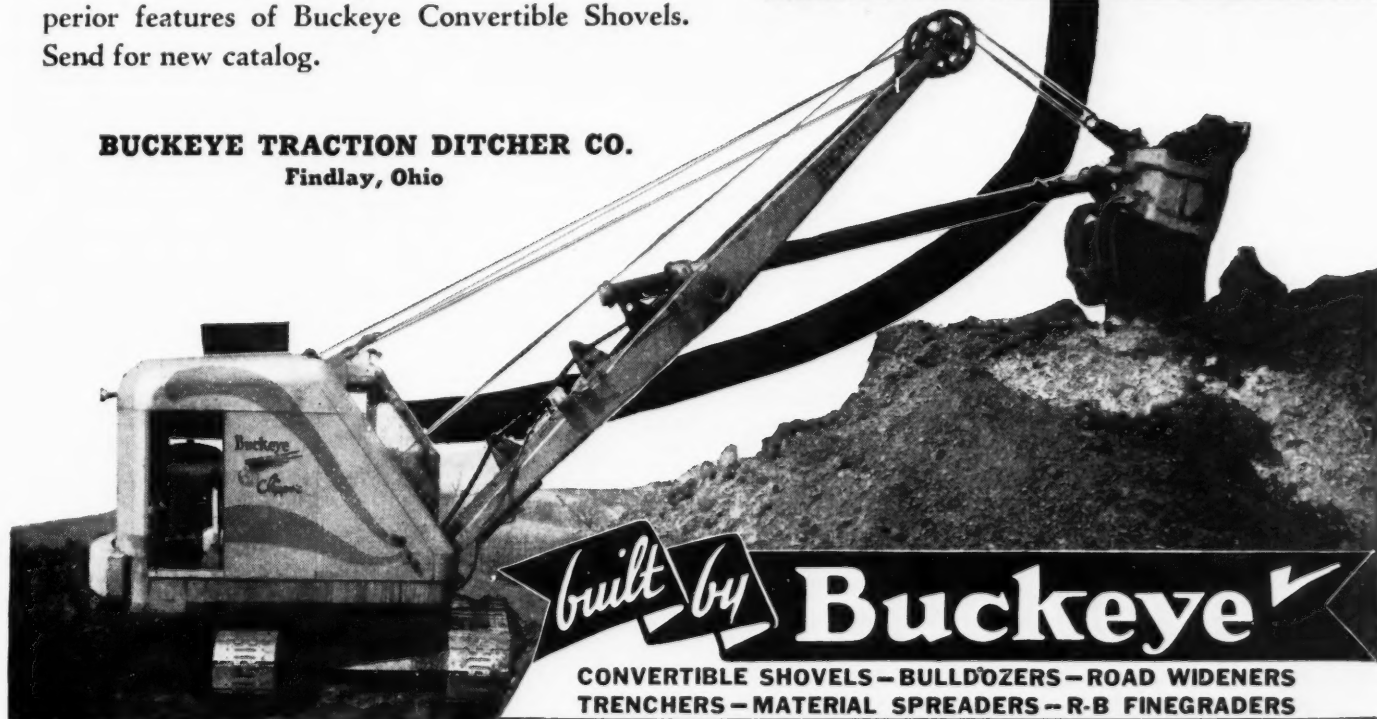
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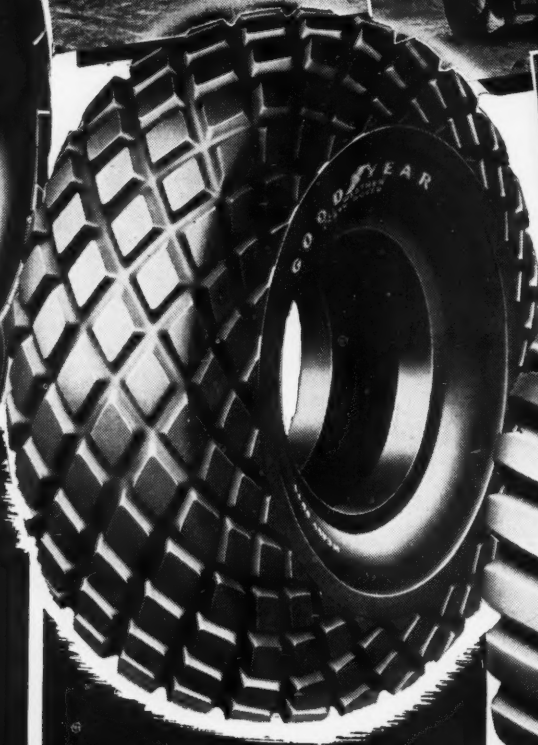
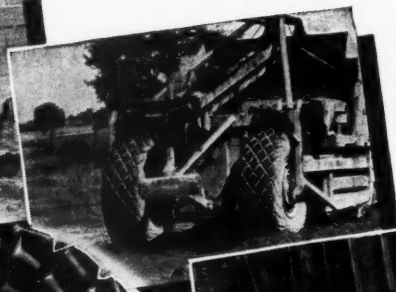






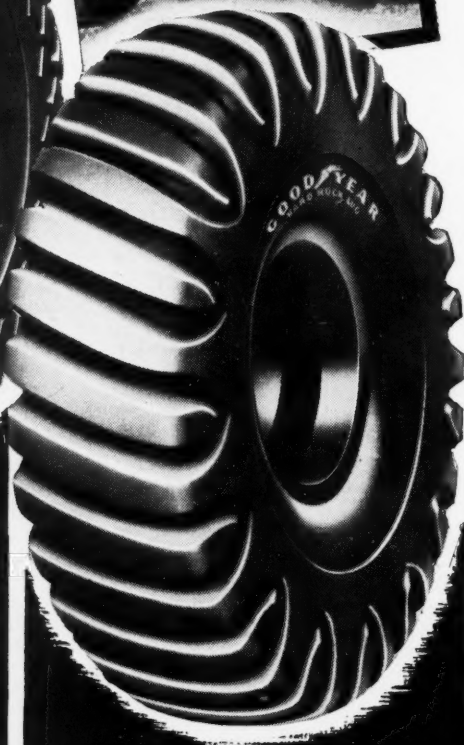
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# Construction Methods

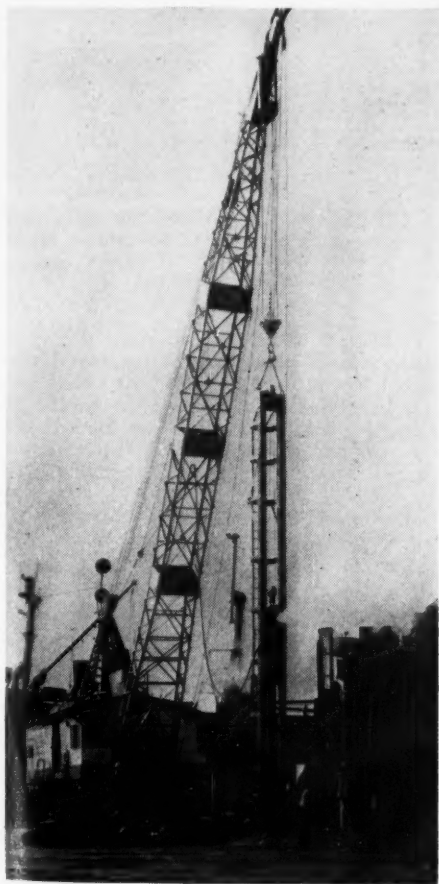
WALDO G. BOWMAN, Editor

Volume No. 28

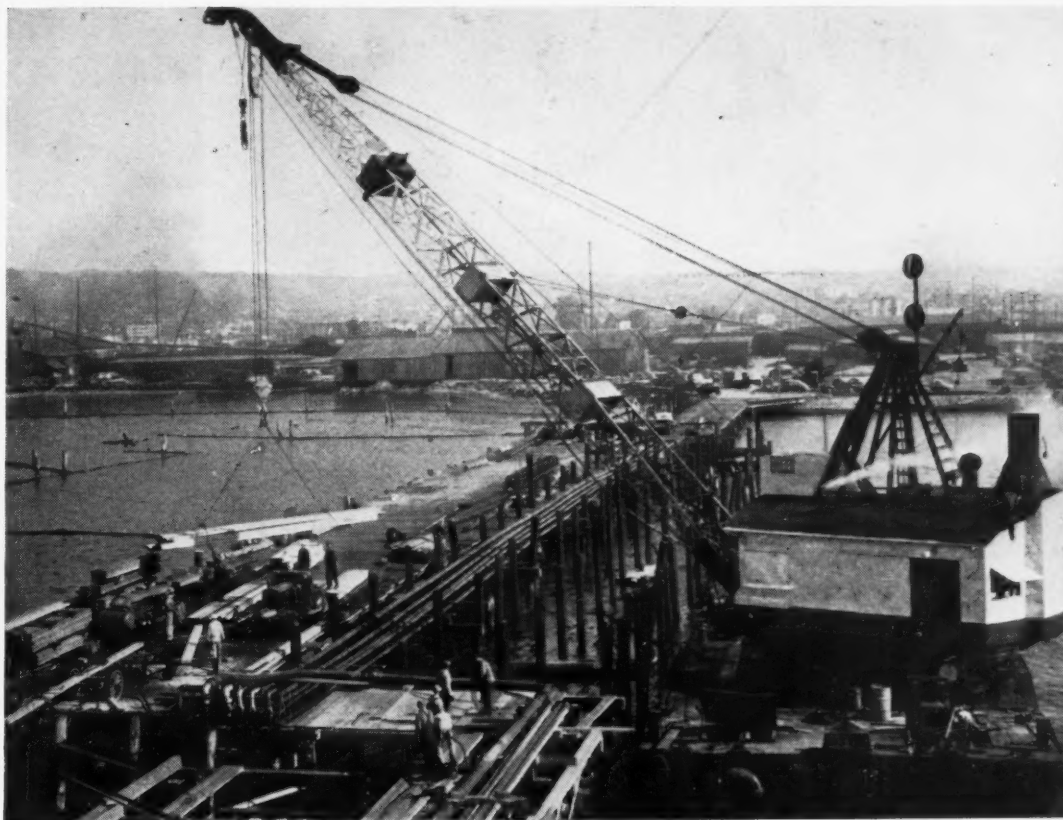
JULY, 1946

No. 7

## WHARF REBUILT WITHOUT HALTING SERVICE



PILING IS DRIVEN through holes cut in one-half of old wharf deck. In this manner wharf is rebuilt without being taken out of service. Oil tanker in background is unloaded while rebuilding work is carried on.



HALF OF OLD WHARF is available for service while other half is being rebuilt. Piling for first half to be rebuilt can be seen on right. The 38-ton barge-mounted crane, used also for driving and pulling piling, is here shown moving decking material to workers in foreground. Note oil lines which have been carried forward to end of new pier which extends beyond end of existing pier.

A SAN DIEGO, CALIF., WHARF was rebuilt and enlarged recently without service interruption by completing the work on half the wharf width before starting on the other half.

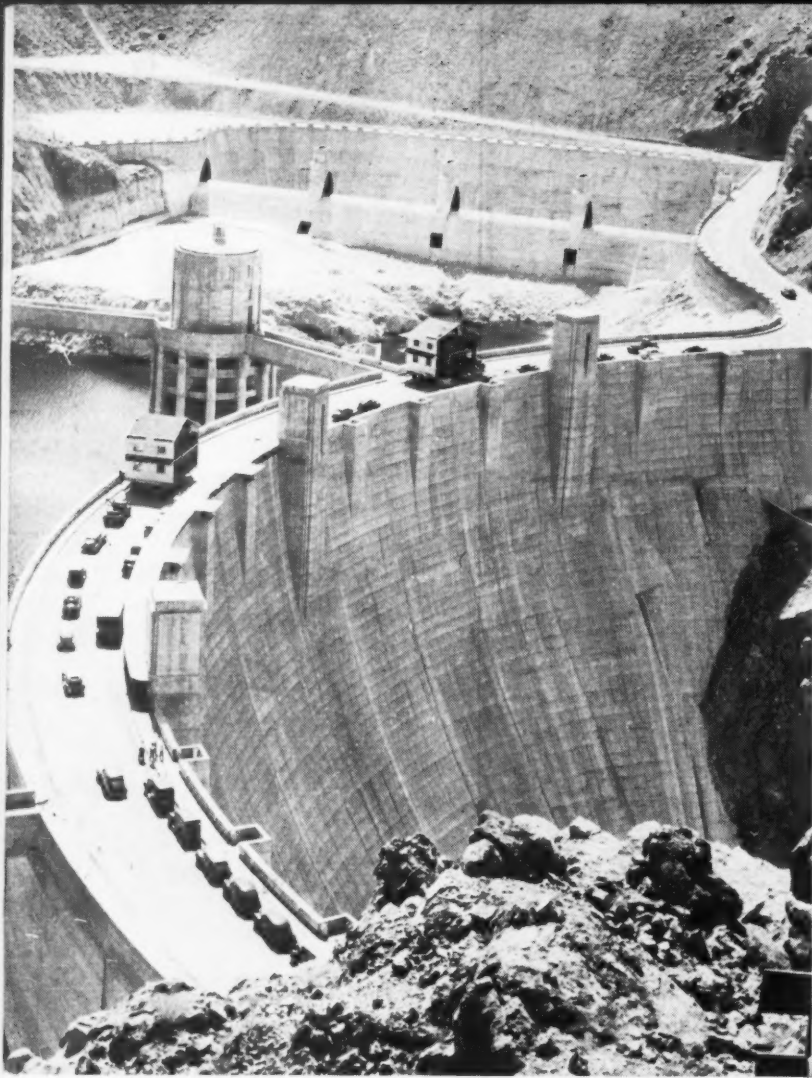
As the old wharf was too weak for heavy loads, floating equipment was used. This consisted of a 38-ton crane equipped with a type 10-B-3 McKiernan-Terry steam hammer. Piles were driven through holes cut in the deck of the old wharf. When piles were down on half the wharf area the old decking was removed on that half and the old piling was pulled by the crane. When half of the wharf had been

replaced, it was used for the lumber and oil operations while the other half was built.

The completed pier is 700 ft. long and has a loading head 40x78 ft., so that the largest type tanker can be accommodated. Five oil lines are mounted on the wharf leading to shoreside storage.

The \$400,000 project includes, in addition to the pier construction, the erection of five oil storage tanks having a total capacity of 100,000 bbl. The wharf is being rebuilt by the Case Construction Co., of San Diego, for the Union Oil Co. of California. L. D. Leeper is construction engineer in charge.





TEN ARMY BARRACKS are moved in 20-ft. sections across Boulder Dam en route from Boulder City, Nev., to Utah Construction Co. camp 90 miles below on Colorado River. They were bought by U.S. Bureau of Reclamation to house workers at Davis Dam.

# THIS MONTH'S NEWS REEL



PREFABRICATED THREE-APARTMENT COTTAGES are assembled by Russians as part of reconstruction program in devastated areas around Stalingrad.

Sovphoto

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UNITED NATIONS' GENERAL ASSEMBLY will move to site of old New York World's Fair (below) in Flushing Meadow Park Sept. 3. Grounds around New York City building, now being remodelled, are being cleared for U.N. interim home.

Wide World Photo

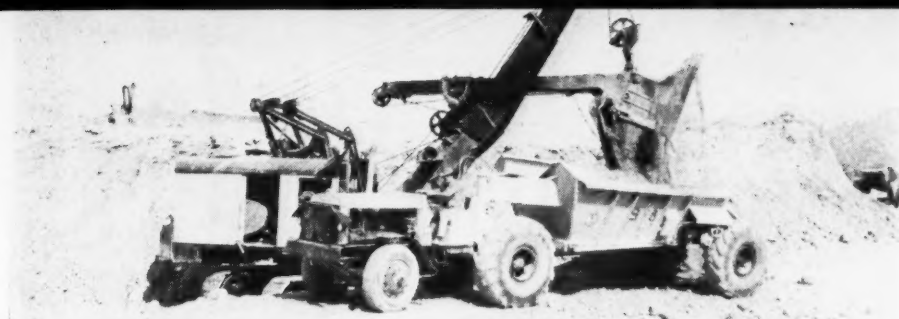
SWAMP FILLED WITH FOUNDRY SAND (below, right) is site of Chevrolet Grey Iron Division foundry being built at Saginaw, Mich., by Spence Bros. for General Motors Corp., with Albert Kahn, Inc., of Detroit, as architect. On basement areas columns are carried on spread footings below basement floor level; elsewhere footings are kept at high level near surface and supported on short piles about 35 ft. long.



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**SANALONA DAM** on Tamazula River near Culiacan, Mexico, will, when completed, contain about 5,000,000 cu. yd. of earthfill, be 2,600 ft. long and rise 220 ft. above river bed. Morrison-Knudsen de Mexico has contract for 3,250,000 cu. yd. J. D. McClary is general superintendent. Here 2½-yd. Northwest shovel loads bottom-dump Euclid of 13 cu.-yd. struck measure capacity with heavy clay and gravel.



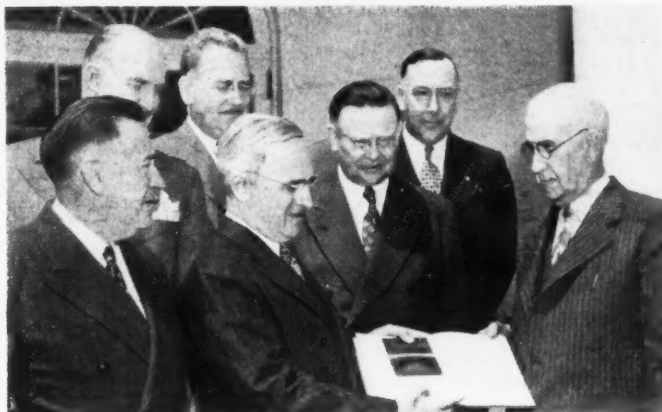
← **HOUSING BILL** providing \$400,000,000 is signed by **PRESIDENT TRUMAN** May 22. Looking on are (left to right): **REP. WRIGHT PATMAN** of Texas; **SEN. ROBERT F. WAGNER** of New York; National Housing Administrator **WILSON W. WYATT**; Federal Housing Administrator **RAYMOND M. FOLEY**; and **REP. BRENT SPENCE** of Kentucky.

Press Assoc. Photo



**NEW NORTH LANE** of Cleveland's Lake Shore Drive is being built over newly filled land for approximately three-quarters of a mile. Slag is used for base, followed by dry macadam and topped with asphaltic concrete. Roadway is 52 ft. wide. Curve of south lane will be flattened out. Horvitz Co., of Cleveland, has contract for this \$118,688 job which will be completed by mid-July.

**HONORARY LIFE MEMBERSHIP** in American Road Builders Association is presented to **PRESIDENT HARRY S. TRUMAN**, who has belonged to Jackson County, Mo., group of A.R.B.A. for 10 years. Watching award of gold membership card and engrossed parchment by **JAMES J. SKELLY** (right), A.R.B.A. president are (left to right): **CHARLES M. UPHAM**, engineer-director; **J. T. CALLAWAY**, president, Manufacturers' Division; **D. W. LEONARD**, Jackson County's chief highway engineer; **REP. J. W. ROBINSON**

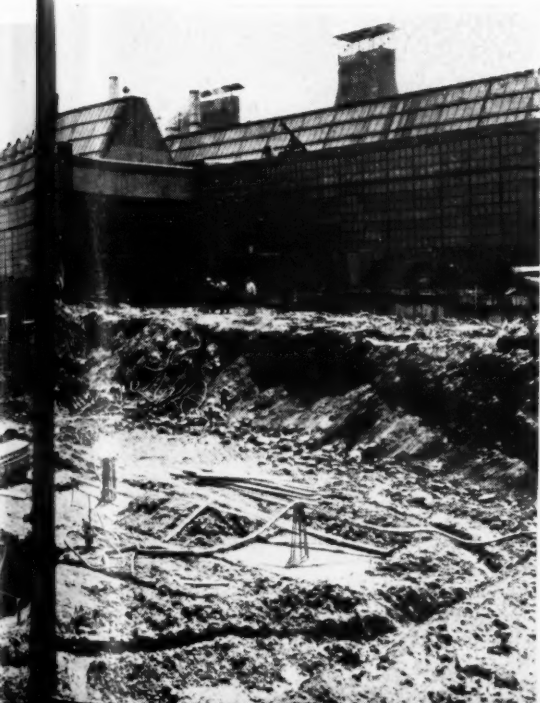


of Utah, House Roads Committee chairman; and **JOHN A. LONG**, manager, A.R.B.A. County Highway Officials' Division. Ceremony took place at White House.

Reini Photo

**TUNNEL PROJECT** (below) starts above ground. S. A. Healy Co. builds access road to south portal of its Rainbow Tunnel job for San Diego branch of Metropolitan (Calif.) Water District system with Caterpillar D-8 tractor and LeTourneau bulldozer.

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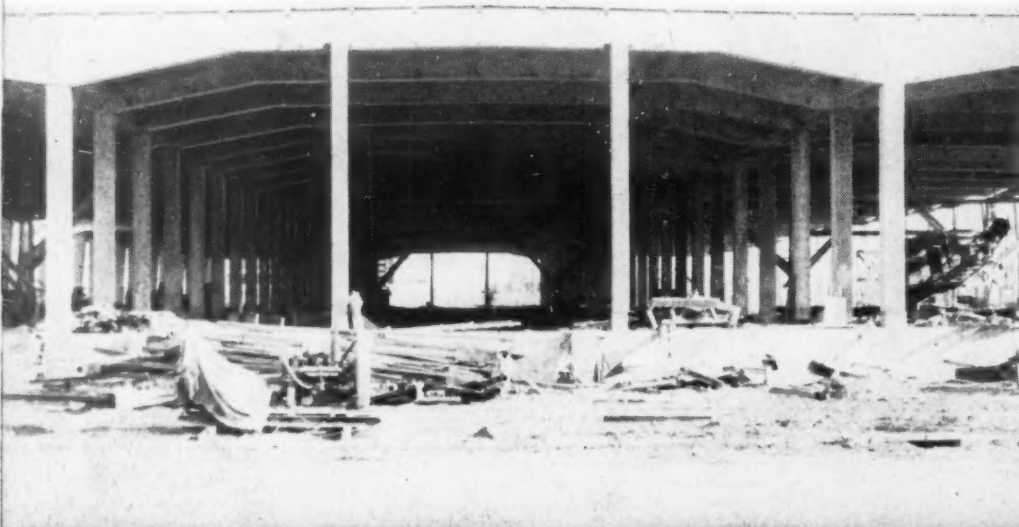


# LATEST METHODS OF *Precasting* AND



**CONCRETE CORE**, or reverse mold, around which channel-shaped girder halves are cast, has hard, smooth, oiled surface. Transverse recesses in core form stiffening diaphragms in channel, while vertical slots thicken channel flange at points where inserts will be placed for through-bolts. Plywood sides of form are hinged at bottom for speedy stripping and reassembly.

**PRECAST CONCRETE UNITS** (below), fabricated into structural members, make up fireproof warehouses. Material and weight are saved by using concrete channels bolted together to form hollow box-sections.



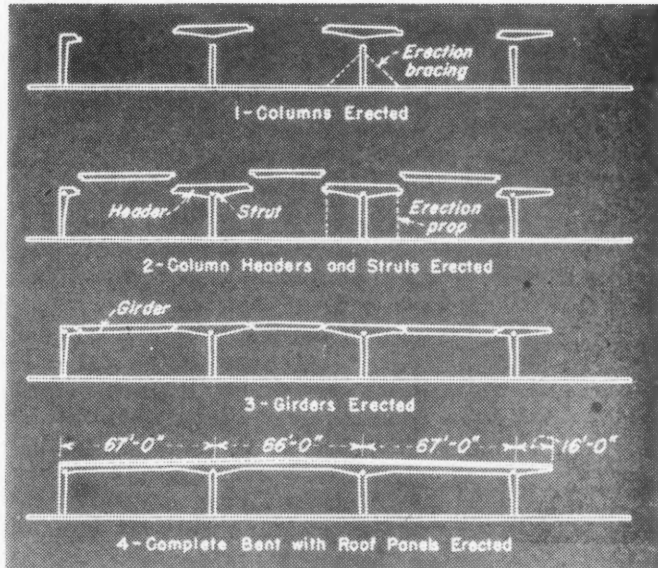
By **A. AMIRIKIAN**  
Designing Engineer  
Bureau of Yards and Docks, Navy Dept.,  
Washington, D. C.

**INGENIOUS CASTING AND ERECTION METHODS** were developed for the construction of two prefabricated concrete warehouses of novel design recently built at the Naval Supply Depot, Mechanicsburg, Pa. Concrete members, reinforced with wire mesh bent to shape in a pneumatic press, were cast in forms of plywood and concrete, and were removed from the molds within 24 hr. after pouring. The green

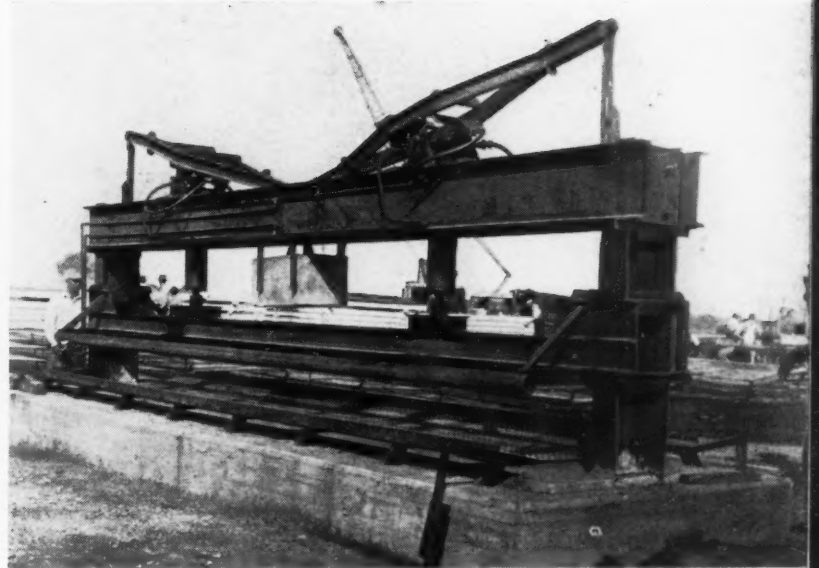


# Erecting

## CONCRETE BUILDING UNITS



SEQUENCE OF ERECTION OPERATIONS, using precast concrete units, is shown in these four sketches.



PRESS FOR BENDING welded wire fabric to trough shape for reinforcing precast concrete members, utilizes old dump-truck cylinders operated by compressed air. Counterweight acts on yoke linkages to aid in retracting upper die. Press is bending 2-in. mesh for roof slab.

concrete units were handled by a unique suction lifting pad designed for full-length support. Hollow box sections, built of channel-shaped elements bolted together, were fabricated into rigid-frame bents by welding together the reinforcing rods of adjoining members and

filling around the joint with concrete.

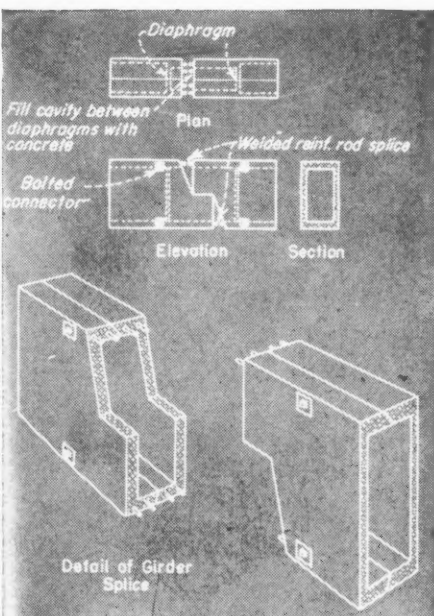
Each warehouse, 600x200 ft. in plan is 24 ft. high, with a minimum vertical clearance of 19 ft. for storage. Four-legged transverse bents subdivide the structure into three interior bays of about 67 ft. each,

with a loading-platform canopy cantilevered 16 ft. beyond one side of the warehouse. The bents, on 20-ft. centers, are interconnected by a line of hollow concrete struts at the top of each column. Each bent is composed of ten component framing members, eight of which consist

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**GIRDER SPLICE** (below) is made by welding abutting reinforcing rods and filling cellular space between precast hollow units with concrete.

**HAUNCHED EXTERIOR COLUMN** (below), poured from 3-cu. yd. truck mixer, is vibrated by pneumatic chipping hammer held against reinforcing rods. Approximately 100 molds are used for casting about 4,000 concrete elements.







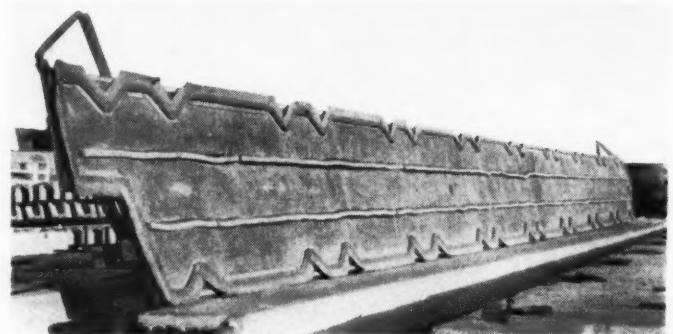
of bolted pairs of channel-shaped elements. Channel webs vary in thickness from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  in., and are stiffened with a series of diaphragms between flanges. The precast concrete roof slab,  $1\frac{1}{4}$  in. thick, consists of ribbed panels 20 ft. long and 5 ft. wide. Longitudinal edge beams 8 in. deep, and 6-in. deep transverse ribs, divide the panels into 5-ft. square sub-panels. The warehouses are equipped with monitors built of similar precast slabs.

#### Fabrication of Members

The framing of the two buildings consists of some 4,000 precast pieces, or elements, cast in 100 molds in an outdoor casting yard. With the exception of the struts and the interior columns, which were cast in one piece around paperboard tubes, the elements were cast in molds of plywood sides and a concrete center core. The concrete core of the form was tailored to exact dimen-

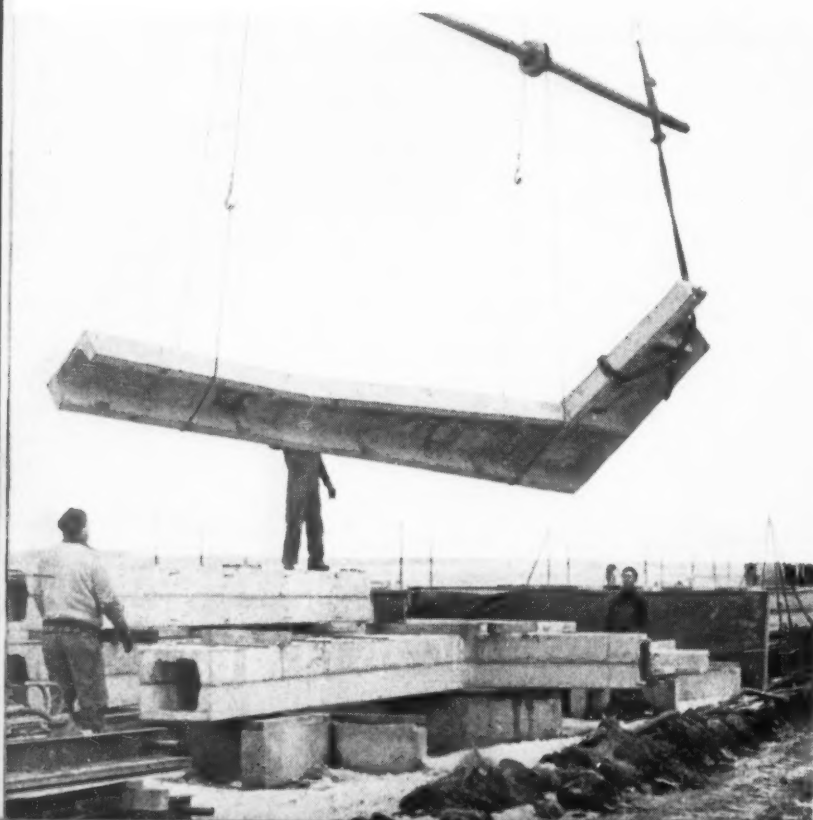
**EARLY REMOVAL** of channel-shaped half-girder from mold is facilitated by using suction lifting pad to support member over its entire length. Use of high-early-strength cement, and removal of excess moisture by vacuum mats, allows sections to be removed as early as 20 hr. after casting.

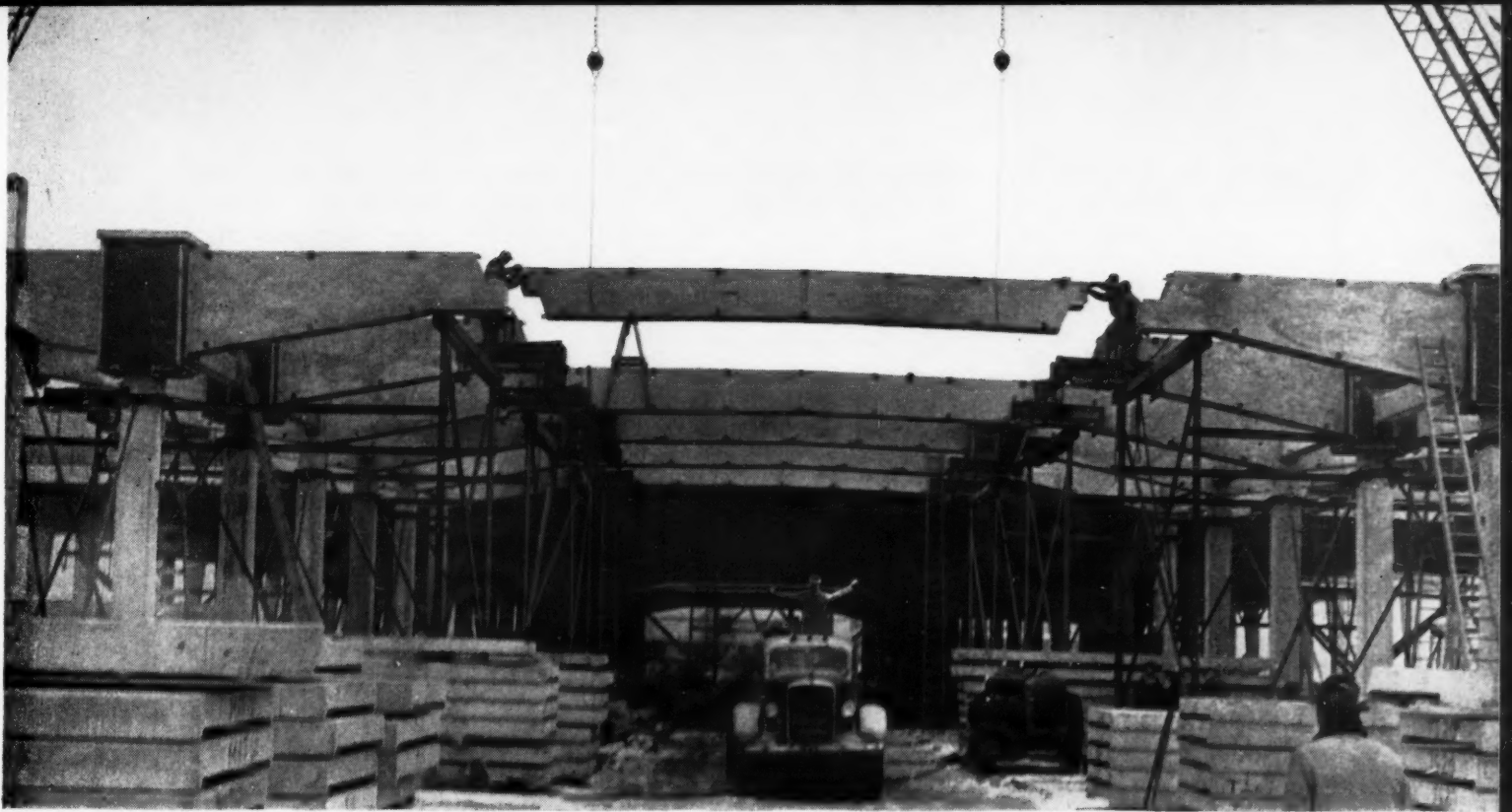
**SUCTION PAD** for lifting green concrete girder sections is made of plywood fastened to steel frame and edged with soft rubber. Vacuum of  $12\frac{1}{2}$  in. of mercury, supplied by suction lines running through casting yard, enables crane to lift pad and concrete member.



Page 84

**CHANNEL SECTION** for exterior column (below) is turned over preparatory to receiving its mate which will be bolted to it. Roller sling on crane facilitates turning. Note paired channels ready for bolting into hollow box-sections.





**BOX GIRDER**, composed of two bolted channel sections, is lifted to place. Bracing supports members until they are joined into a rigid frame by welding projecting reinforcing rods and concreting around them. Boxes at column heads protect freshly-poured joints from winter weather.

sions, and its dense surface was highly polished to a smooth contour and then was thoroughly oiled. Plywood form sides were hinged at the bottom to permit rapid stripping and re-erection, and wooden nailing strips placed in the concrete slab of the casting yard provided a base for side form bracing. Welded 2-in. mesh wire fabric was bent to trough form in a job-built press operated by compressed air. The

press consisted of a pair of hydraulic cylinders from a dump truck converted to compressed air operation, mounted on a structural steel frame and heavy concrete base. A sheet of wire fabric, placed in the press so that its long edges rested upon hinged, reinforced angle bars, was forced down by the pipe edges of an upper die having the dimensions of the inside of the trough to be formed. The sides of the trough

were formed when the edges of the sheet were bent up sharply as the descending upper die tilted the edge angles. After being shaped, the troughs were wired to rods as reinforcing cages, and were placed in the forms.

Concrete from a central batching plant was delivered to the casting yard in 3-cu. yd. truck-mixers, and was vibrated by holding a pneumatic chipping hammer against the re-

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**STACK OF PRE-CAST ROOF PANELS** is loaded on truck-trailer with aid of spreader on cable from crane boom.



**ROOF SLAB IS** built of precast panels 20 ft. long and 5 ft. wide, divided into 5-ft. square sub-panels. Slabs are held in place by straps bolted to girders and welded to panel inserts.





inforcing rods. The design of the sections, which were relatively thin, was predicated on the use of pea gravel and crushed stone screenings for coarse aggregate, and 8 to 9 bags of cement per cu. yd. of concrete. The limited number of molds necessitated a quick turnout of castings, and to this end high-early-strength cement was used, and excess moisture was removed from the cast elements by vacuum mats. Vacuum service pipes running through the casting yard, supplied the mats and also a novel suction device designed for lifting and moving the green concrete pieces.

Members were removed from the molds, as early as 20 hr. after casting, by crawler cranes with a suction lifting pad that supported the castings over their entire length. The pads, of various shapes to fit the upper surface of each type of unit, consisted of a plywood sheet, edged on the face with soft rubber and supported by a light steel framework. The lifting pad, placed on the member to be moved, was connected by hose to the vacuum line, and the air between pad and concrete was partially exhausted. A vacuum of about 12½ in. of mercury was sufficient for a crane to lift safely the pad and casting. To aid in breaking the seal between the oiled mold and the cast unit,

compressed air was introduced under the casting through recesses in the form's center core. Members were stacked near the casting molds for curing, and the channel-shaped elements were assembled subsequently into box sections with bolts extending through pipe sleeves cast near the channel flanges.

Erection of the precast members, on a previously prepared concrete foundation and floor slab, was similar to that of a steel structure. Members were hoisted by a crawler crane operating in each of the two side bays, and were held secure, prior to jointing, by erection braces fitted with turnbuckles to facilitate positioning. The heaviest lift, a 43½-ft. side-bay girder 20 in. wide and 36 in. deep, weighed about 7 tons. Columns, column caps, struts, girders, and roof panels were erected in that order; with the erection progressing from one end of the building to the other, and from the sides toward the center.

Columns were joined to the floor by filling with concrete around anchoring steel that projected from the foundation into the hollow column. In casting the members, reinforcing rods projecting at column tops and at the ends of girders, struts, and column caps served to join them into a rigid frame. The connections were made by grouting,

through access holes, the joint pockets into which the reinforcing bars extended. In the joints between the girders and caps, adjoining bars were spliced by welding before the grout was poured. To secure the roof panels, steel inserts in the roof beams were welded to straps bolted to the girders.

After shell erection, a hollow concrete-block exterior wall was laid up, heating and electrical systems were installed, and a built-up roofing membrane was laid over the concrete roof slab.

The two warehouses were planned and built as an experiment to explore the possibilities and relative advantages of precasting as compared with other methods of construction. The successful completion of the project has demonstrated the merit of precast concrete construction and this new technique will no doubt play an important role in future building construction, especially in the industrial fields.

Despite the experimental nature of the work, the contract was let to the Corbetta Construction Co., New York, on a lump-sum basis. The first warehouse was erected in 40 days and the second one was completed in 18 days. The buildings were designed by the writer, who originated the idea of the fabricated precast concrete units.

## Graphic Arts Center to be 40,730,000-Cu. Ft. Structure



**MAMMOTH BUILDING** costing \$20,000,000 and having a volume of 40,730,000 cu.ft. will be erected by Thompson Starrett Co., Inc. for Nordblom Associates, Inc., to serve printing industries at 3-block-long site on

lower West End Ave., New York City, acquired from the New York Central Railroad. Designed by Francisco & Jacobus, engineer-architects, of New York, 13-story steel frame structure with concrete floors and brick and

stone exterior, to be called the Graphic Arts Center, will cover ground area of 722x267 ft., more than 4 acres. Floors can carry live loads of 350 lb. per sq.ft. to accommodate heaviest printing presses.



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for  
Service*

TWENTY-FIVE YEARS as president of one of the country's largest and most successful contracting firms is an honor that comes to few men. Yet Luther Stevens Oakes has not only been head of Winston Bros. Company of Minneapolis since April 6, 1921, but he is still going strong on the job and promises to continue for many years to come. Throughout his 39 years as a contractor—all with Winston—he has held to three aims: advancing employee relations; giving the customer a square and honest deal; and raising contracting to a respected and dignified business.

Born in Jericho, Vt., in the shadow of Mt. Mansfield on April 15, 1877, Oakes is called the "Yankee from Vermont" in a biography by Wm. J. Rohan, Winston Co. vice-president. Four years later the family moved to Windsor, Vt., which became his boyhood home. Here amid the granite hills was laid the foundation of his sterling character, his thrift and integrity. His formal education included four years at Dartmouth College and one year at Thayer (Dartmouth) School of Civil Engineering, from which he was graduated in 1900.

For seven years after graduation he was engineer for various railroads in the West, then joined Winston Bros. Co. May 1, 1907, on the Milwaukee Road west coast line job in the Rocky Mountains. In May, 1912, he tackled the Winston contract on the Calumet-Sag channel in Chicago, and there learned the



LUTHER S. OAKES

bitter lesson that even the most prudent management cannot overcome a too-low bid and the selection of wrong equipment.

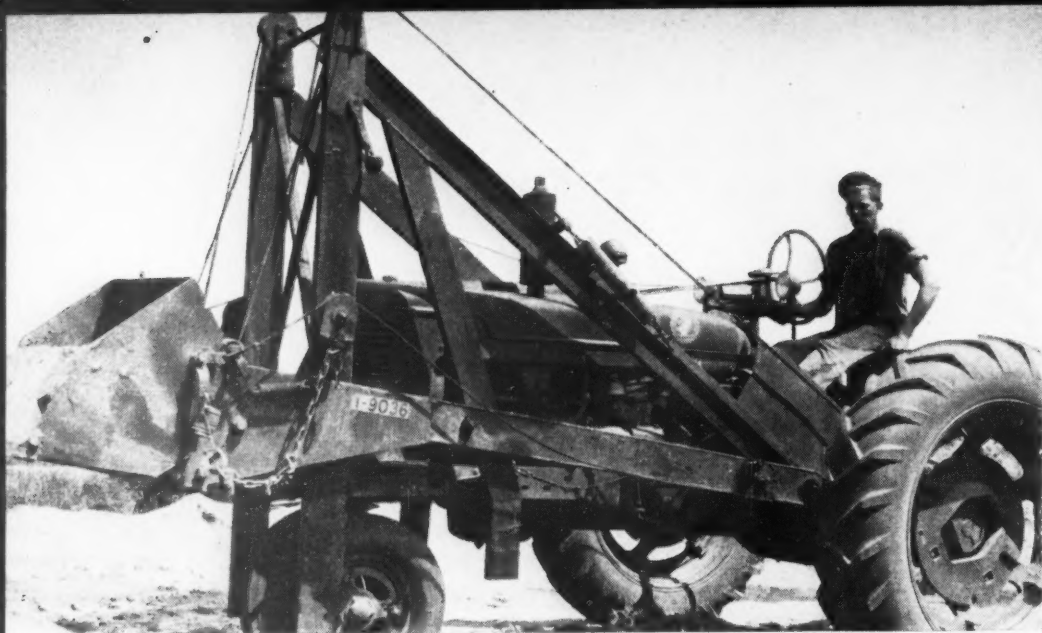
In 1913 Oakes became a director of the company at 36, and in 1921 was named president to fill the big shoes of W. O. Winston, who was then known as "the grand old man of construction." Through booms and depressions, through peace and war, Oakes has guided the firm with a capable and understanding hand.

During his quarter-century of leadership, Winston Bros. spread out from coast to coast, and into Canada, Mexico and South America. Many of their jobs made construction history. In 1941 Winston entered into a joint venture with C. F. Haglin & Sons, Missouri Val-

ley Bridge & Iron Co. and Sollitt Const. Co. to take on defense and, later, war contracts.

Oakes always has been interested in employee relations. One of his ideas was a group pension plan for key employees. Later he installed group hospitalization and life insurance programs. Promising young employees are given a chance to purchase shares of the company's closed stock.

The construction industry is proud of Luther S. Oakes, the company he heads and the ideals for which he stands. If all contractors were like him, the surety companies would go out of business, for the saying "His word is as good as his bond" truly applies to this Yankee from Vermont.



FRONT-END LOADER mounted on farm tractor carries  $\frac{3}{4}$ -yard bucket which is filled by being pushed forward into pile of material. Two hoist lines from improvised double-drum winch can raise bucket to maximum height of 7 ft. for loading truck.

## Kansas Improvises Equipment for

## Highway



AT MAXIMUM ELEVATION, bucket is held in position by automatic brake until it is dumped and released for lowering by operator.



SINGLE-SHAFT TWO-DRUM HOIST made from rear axle of 1-ton truck and driven through power take-off of tractor operates front-end loader.

Page 88

LOADER ATTACHMENT (below) installed on discharge side of Kwik-Mix portable bituminous mixer is equipped with 14-cu.ft. bucket (riding on steel wheels inside channel members), which is easily capable of loading mixer output of about 20 tons per hr. into trucks. When detached from mixer, loader assembly can be towed from place to place on two-wheel mounting, equipped with pneumatic tires.



PORTABLE TWO-DRUM WINCH (below) on flat-bed truck operates pair of slip scrapers unloading gravel from railroad car into truck spotted between winch and car. Scraper hauling ropes are reeved through pulleys on tubular A-frame braced by pipe to winch truck. By operating two slip scrapers alternately to deliver gravel to apron feeding truck, unit unloads 60 cu.yd. per hour at equipment operating cost of 65 c.





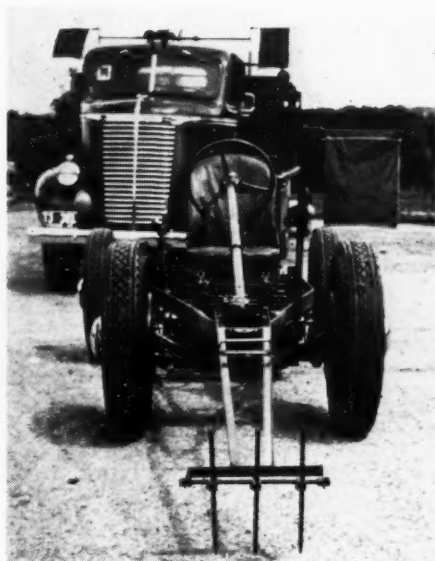
TO TAKE CARE OF maintenance work for which no manufactured equipment was available in war-time, the Maintenance Department of the State Highway Commission of Kansas, L. L. Marsh, chief maintenance engineer, has developed a number of mechanized attachments and other equipment to save labor. Among the home-made units, built largely of salvaged material under

## Maintenance

the supervision of W. H. Jury, superintendent of equipment, are: (1) front-end tractor loaders for placing material in trucks; (2) bituminous loaders, used with a commercial mixer for loading trucks; (3) gravel unloaders, to unload materials from freight cars into trucks; (4) traffic stripers, designed to apply from one to three  $4\frac{1}{2}$ -in. traffic lines at a time; (5) motor grader roller attachments for compacting crushed stone and bituminous side strip material on highway widening projects; and (6) road magnets to pick up nails, tacks, steel wire fragments and other metal objects which cause tire failures. Accompanying photographs illustrate these developments.



**FREE-STEERING TRAFFIC-STRIPPE APPLICATOR** pushed by 2-in. pipe rod in front of truck can apply from one to three  $4\frac{1}{2}$ -in. stripes at a time.



**ADJUSTABLE PINS** on guide bar in front of paint applicator enable operator to steer machine accurately along lines to be sprayed. Universal connections on pusher bar permit free steering of traffic striper.



**PEDAL CONTROL** by operator of three DeVilbiss paint guns permits application of continuous and broken stripes as desired in one trip of machine.

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**BETWEEN STRIPING JOBS**, traffic line machine is transported on two-wheel trailer hooked to rear of pusher truck, which carries air compressor, paint tanks and paint agitator.







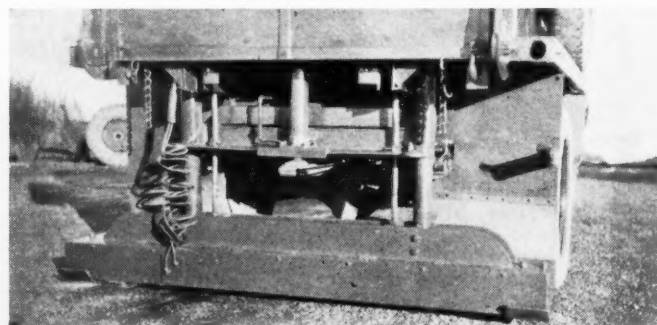
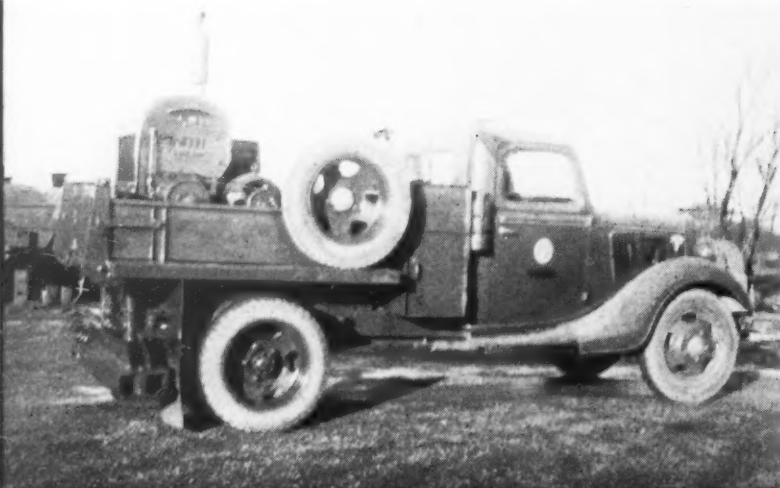
## Highway Maintenance ... Continued

↑  
SMALL ROLLER 18 in. wide and 36 in. in dia., substituted for moldboard under circle of motor grader, compacts subgrade and crushed-stone and bituminous courses in widening strips alongside existing pavement. Mechanical moldboard lifting apparatus (right) controls roller pressure for compaction purposes and raises roller clear of pavement for travel.



←  
PORTABLE MAGNET mounted at rear of truck (below, left) consists of 7-ft. bar having four cast-steel cores wrapped with coils of No. 12 copper wire connected to Ford-engine-powered G-E 5-kw. generator. Bar is raised and lowered by hydraulic ram (below, right) hooked up to hydraulic pump (left) in operator's cab. Lowered to within 4 in. of road surface, electromagnetic bar can travel at speed of about 12 mph. in picking up tire-damaging metal objects.

After magnet has accumulated about 3 in. of material, operator stops truck and shuts off electric current to drop metal on canvas sheet placed under bar. Engine-generator set has instrument panel and controls for regulation of voltage and amperage according to requirements. During one summer season, magnet recovered average of 391 lb. of metal per mi. from dry surface roads at average cost of \$3.04 per mi., which is about cost of one tire repair.



# A HOUSING

## PROJECT FOR DAVIS DAM



**PLYWOOD SHEET** is being carried into building to form interior partitions; earth piles indicate excavation for water lines and sewers.



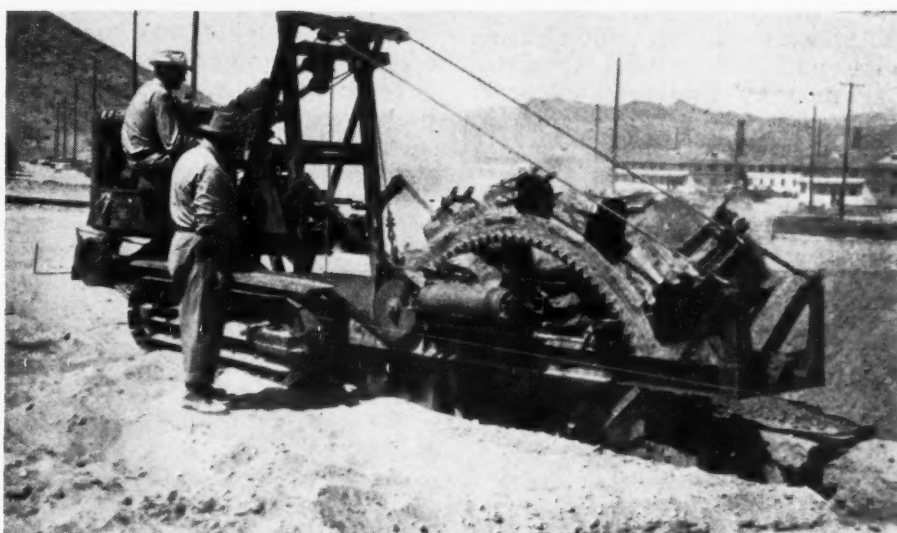
**SINGLE-FAMILY DWELLING UNITS** for Utah Construction Co. personnel have wood frame, composition roof and floors of uncured hardwood (which happened to be available).

**BUILDING OF HOUSING FACILITIES** for construction and office personnel is one of the first jobs the Utah Construction Co. has undertaken after being awarded early this year a \$21,462,500 contract for Davis Dam, earth and rockfill structure across Colorado River in Arizona. Housing is being made available for the majority of the employees which will average around 1,000 for the 3½-yr. period the job will be under way for the U. S. Bureau of Reclamation. Materials shortages are the main problem which may delay the completion of some of the facilities which are planned. However, progress is being made and the housing units are be-

ing occupied in excess of designed capacity as soon as they are made livable. In the meantime, employees are sleeping in offices, shops and, in fact, under any available shelter in the surrounding desert. Some are temporarily driving to work over distances of 50 mi.

Because the nearest town, Kingman, Ariz., is some 34 mi. away, the Utah company will eventually provide near the damsite all the facilities necessary for a small city. In addition to housing, plans include a school, a hospital, a recreation center with a swimming pool, a church,

*(Continued on page 180)*



**DITCHING MACHINE** speeds trenching for water and sewer lines in camp and on trunk sewer to disposal plant downstream.

→ **SQUARE CONCRETE POSTS** (right) are poured to support single-family dwelling units. In background have been erected Army barracks purchased as war surplus material, cut into sections and trucked 102 mi. to damsite.





# SPECIAL RIG

## Pulls Long Concrete Piles



Fig. 1 . . . LONG REINFORCED CONCRETE PILES are pulled from San Francisco Bay mud by barge-mounted, heavy A-frame. Crane at left is handling pile which has just been pulled.

REINFORCED CONCRETE PILES, 18 in. square and up to 95 ft. long, were pulled from San Francisco Bay mud by equipment specially designed and built by the contractor. This equipment included (1) a heavy A-frame, (2) a 42x70-ft. barge, and (3) a pile-pulling yoke. The A-frame, mounted on the barge, was made of six 18-in., WF steel beams and was capable of

transmitting a pull of 200 tons. A maximum pull of 120 tons was necessary to remove the piles.

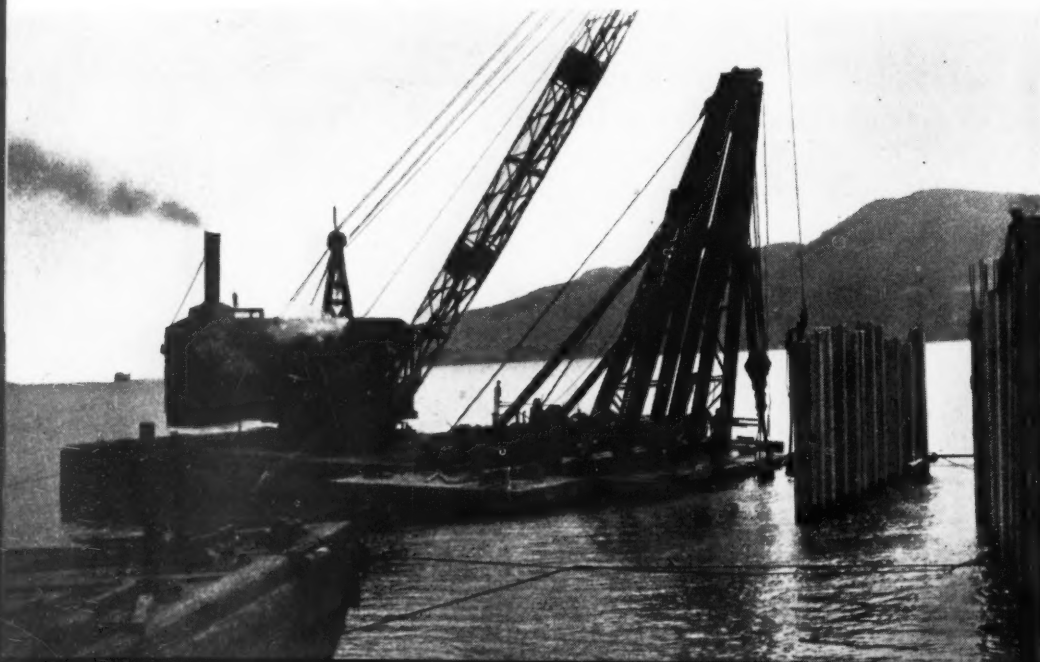
The barge which carried the pile-pulling equipment had reinforced interior bulkheads to take the extra stresses from the A-frame, and was fitted with an outrigger on each side of its bow to provide extra buoyancy. Each outrigger consisted of nine 5x5x7-ft. Seabee pontoon cells

transmitting their buoyancy to the barge through four 18-in. WF beams extending under the full width of the barge and welded to the underside of each outrigger. In addition to winches for providing necessary power, the equipment on the barge included a steam-powered crane from which was suspended a jet pipe used to help loosen the piles. This was made of a long 6-in. pipe which tapered at the tip to a 1-in. nozzle. Water pressure at the nozzle was 400 psi.

The pulling yoke, made of heavy steel plates, transmitted the pull to the pile by steel toggle jaws, on two sides of the yoke, designed so that as the pull increased, the grip on the pile would tighten. Stainless steel welding rods were welded in ridges to the face of the jaws to improve the grip.

The first step in pile pulling was to place the yoke over the top of the pile. The piles were pulled loose by use of this yoke and the A-frame and, after the pile was freed and moving easily, a cable choker was attached to the pile so that a two-point suspension resulted, one end of the cable choker being placed near the top quarter point and the other end of the choker near the center. The pulling yoke then was

Fig. 2 . . . A-FRAME (below), designed specially for this job, pulls pile. Note angle of deck as strain tilts barge. Jet pipe is suspended from crane mounted behind A-frame.





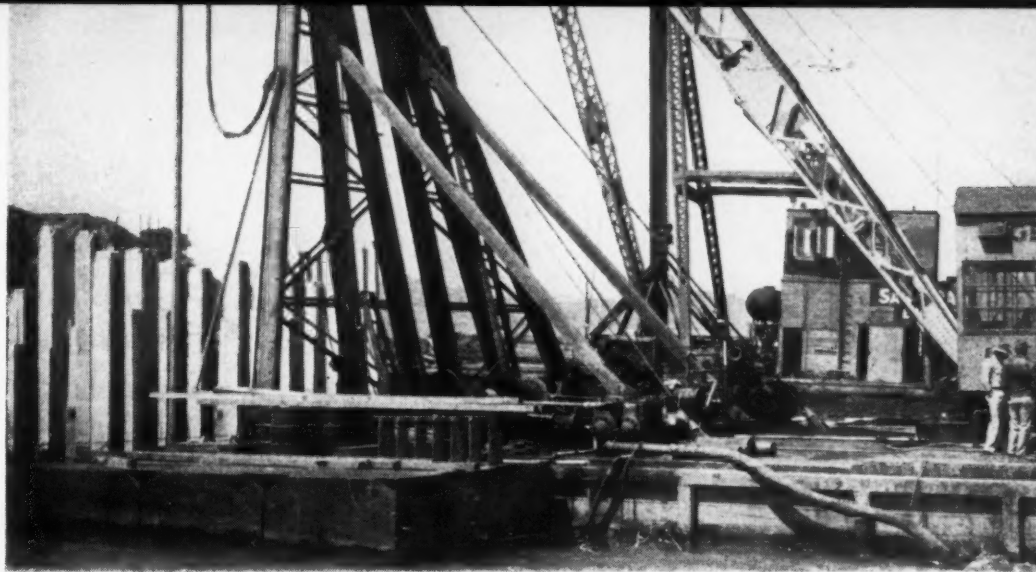
removed and any concrete partly broken loose by the gripping action of the yoke was broken off by workmen with boat hooks in order to prevent injury to men or equipment from falling pieces.

It was found that those piles which had been placed entirely in soft bay mud did not require jetting, but when jetting was resorted to, it was done before the pile was pulled. The jet pipe usually was kept one or two piles ahead of the one being pulled.

During early stages, where long piles requiring jetting were encountered, a good record for an 8-hr. shift was 20 piles. After the crew developed teamwork and the work progressed to the shorter piles, even better results were attained. While pulling piles 60 to 75 ft. long without jetting, as many as 36 piles were pulled in one shift. The best record while pulling piles 25 to 35 ft. long was 53 piles pulled in one shift, or better than one pile every 10 min.

The work was performed by the George Pollock Construction Co., Sacramento, Calif. Gus J. Winberg, of the Pollock company, designed the equipment used on the job and William (Big Bill) Dippold was superintendent.

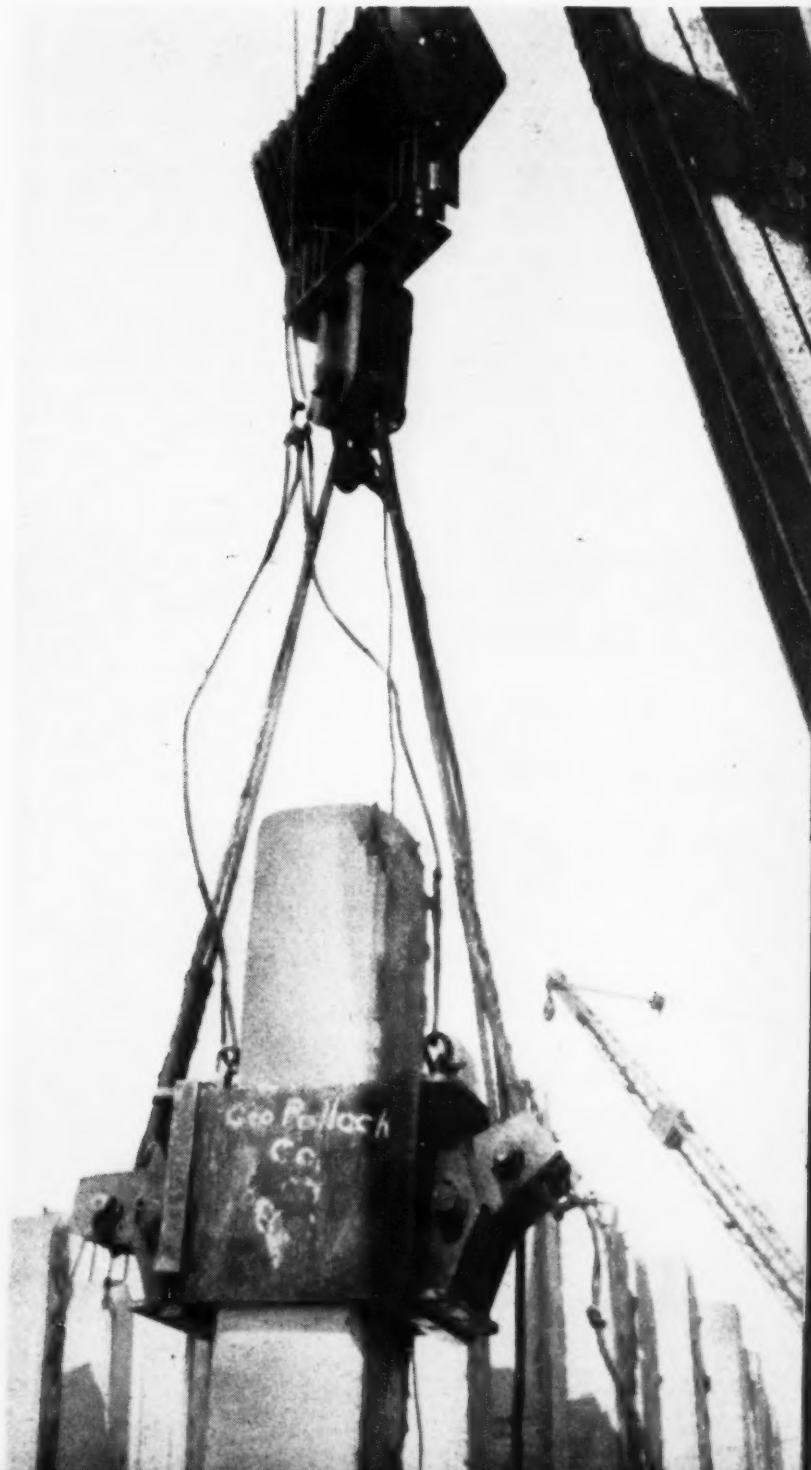
**Fig. 5 . . . GRIPPING JAWS** of pile-pulling yoke (below) are so arranged that as pulling force increases, pressure jaws transmit to pile increases. Stainless steel welding rods, welded to face of jaws, improve grip.



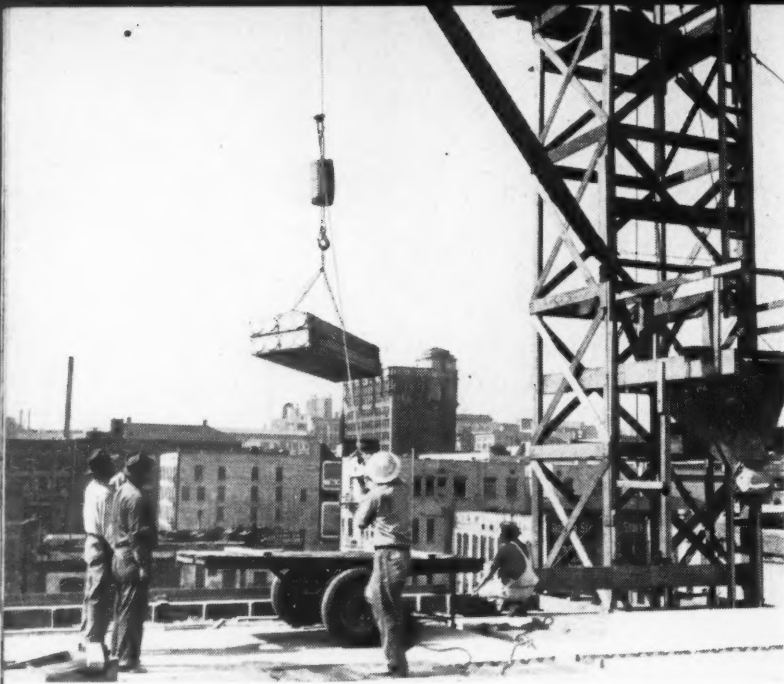
**Fig. 3 . . . OUTRIGGERS** made of nine 5x5x7-ft. Seabee pontoon cells are attached to barge to increase buoyancy. Similar cell group is placed on opposite side of barge. Outriggers transmit their buoyancy to barge by four 18-in. WF, 55-lb. steel beams extending full width of barge and welded to under side of each outrigger.

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**Fig. 4 . . . PILE-PULLING YOKE**, shown here mounted on pile in pulling position, was designed and built by contractor. Jaws of yoke grip 18-in. square pile as pulling strain is applied to jaw toggle arms.



# **LIGHTWEIGHT PRECAST UNITS Simplify Roof Slab Construction**



**FLEXICORE UNITS** for roof slab are lifted to roof level by derrick mounted on corner of hoist framing. Two-wheeled cart is used to transport units to advance edge of slab.

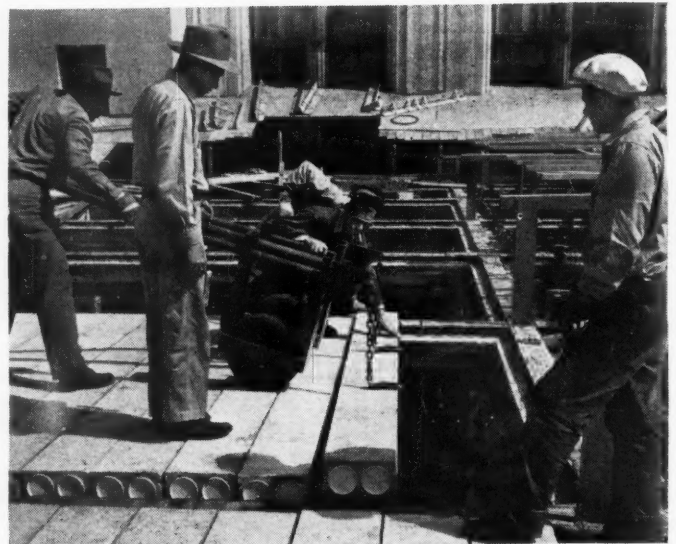
**MADE WITH LIGHTWEIGHT AGGREGATE**, Flexicore concrete units were used for a 6-in. roof slab weighing only 28 lb. per sq. ft. for an addition to the Times building in Los Angeles, Calif. The slab is a precast hollow reinforced concrete unit cast around inflated rubber tubes and having the reinforcing steel prestressed.

The Flexicore units, 6x12 in. in section and 11 ft. long, were lifted to roof level by derrick and were set in place with a simple one-man dolly. Grout, broomed over the roof-slab surface, filled keyways between units to bond them into a solid slab. Despite a green crew, the units were placed and grouted at the rate of 5,000 sq. ft. per 8-hr. shift.

The P. J. Walker Co. was general contractor for the extension of the Times building. Subcontractor for the roof slab was the Wailes-Bageman Co., Los Angeles, for whom Karl Carlson was superintendent.

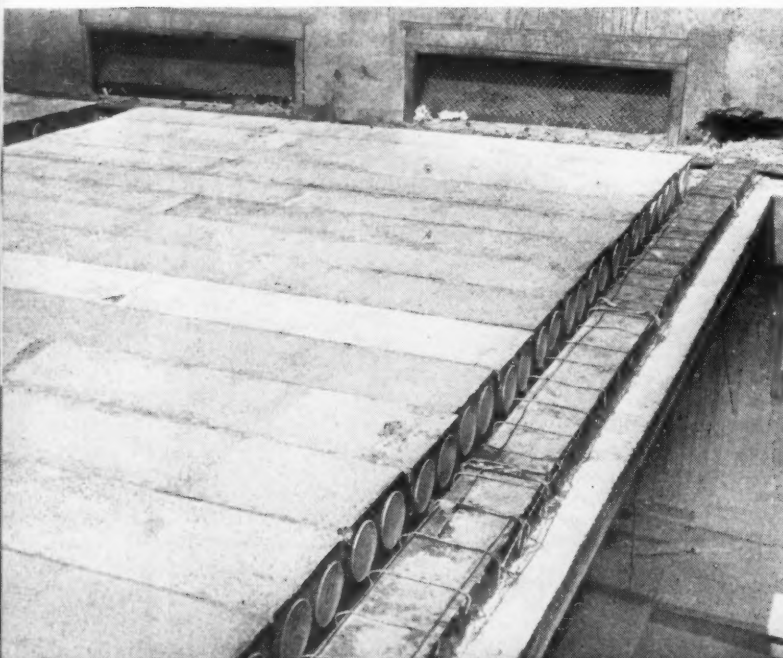
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**SLAB IS GROUTED** by brooming cement mortar into keyways between units. Paperboard shields, sealing ends of hollow circular cores, are to prevent concrete of bonding beam from entering hollow interior of units.



**ONE-MAN DOLLY** lowers 6x12-in. unit 11 ft. long into place. Long keyways in sides of units will be filled with grout to bond precast members together.

**UNDERSIDE OF SLAB** has hangers to support ceiling. Use of lightweight aggregate for hollow Flexicore units results in roof slab weighing only 28 lb. per sq. ft.



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OPEN-BOTTOM HOPPERS built up on Bucyrus-Erie bulldozers at front ends of two International crawler tractors spread soil-cement in 20-ft. lane for landing mat base. Sled runners support spreader-hoppers on subgrade. Trucks dump directly into hoppers.

## Bulldozer Hoppers Spread Soil-Cement Mixture for Landing Mat Base

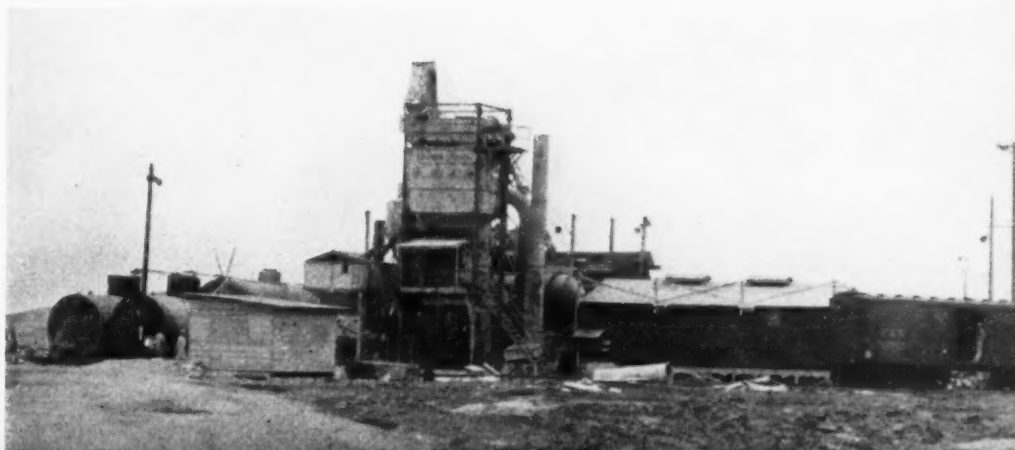
IN CONSTRUCTING LOW-COST RIGID-TYPE BASE for a landing mat to serve coastal patrol blimps at the Hitchcock, Tex., Naval Air Station, during the war years, Norgaard & Shaw, Vilbig Bros., Inc., and Nathan Wohlfeld, of Dallas, Tex., joint contractors for the Bureau of Yards and Docks of the Navy Department, produced soil-cement mix in two pug-mill mixing plants and spread the mixed material on the subgrade in 20-ft. lanes with open-bottom pusher hoppers built up on bulldozer attachments at the front ends of two crawler tractors.

Utilizing a 5,000-lb. pug-mill in one plant and a 3,000-lb. unit in



SHEEPFOOT ROLLERS hauled by caterpillar tractors compact subgrade on which constructors place base of landing mat at Naval Air Station for coastal patrol blimps. In background is one of two pug-mill mixing plants which produce soil-cement mixture for base construction on about 150,000 sq.yd. in total of 450,000 sq.yd. for landing mat, taxiways and mooring-out circles.

→  
5,000-LB. PUG-MILL (right) in this asphalt plant turns out soil-cement mixture for base construction at average rate of 100 tons an hour. This is larger of two plants.





**PIT-RUN SAND-GRAVEL** for soil-cement mix is unloaded from railroad cars at asphalt plant which produces average of 80 tons an hour with 3,000-lb. pug-mill.



**PLANT-MIXED SOIL-CEMENT** is dumped by truck into tractor-mounted spreader-hopper which strikes off material to 8-in. depth for compaction to 6-in. thickness. Two spreaders cover 20-ft. width of lane.



**BEHIND TRACTOR-SPREADERS**, three-wheel 10-ton roller moves on to soil-cement to begin compaction after hand shovelers have leveled irregularities in spread material.

**TANK TRUCKS** (below) equipped with pumps pull up beside compacted lane to apply water and asphalt emulsion by hose sprays.



the other, the contractors were able to turn out a total of about 180 tons per hr. of soil-cement mixture which was spread to 8-in. depth by the pusher hoppers for compaction to 6-in. thickness under 10-ton rollers. Because this rate of production was not sufficient to complete the 450,000 sq.yd. of base in the short time limit stipulated, supplemental materials and methods were used on about two-thirds of the area to build two-course stabilized base to a total compacted depth of 8 in. All the base was surfaced with a 1½-in. wearing course of cold-mixed asphaltic concrete produced by one of the pug-mill mixing plants used previously for soil-cement.

#### Cement-Treated Base

Designated as cement-treated base by the Portland Cement Association, which collaborated with the Bureau of Yards and Docks in the design, the rigid base was constructed of a mixture of pit-run sand-gravel (containing a relatively high proportion of clay) and 3 sacks per cu. yd. of portland cement, with a low total water content of about 8 percent. The mixed material was hauled from the pug-mill mixing plants in 4-yd. end-dump trucks and was spread between 6-in. timber headers 20 ft. apart by means of the specially constructed 10-ft. spreader boxes mounted on the fronts of the tractor-bulldozer units. After the mix had been compacted with 10-ton three-wheel rollers into a smooth 6-in. slab, the surface was sprayed with water followed by an application of emulsified asphalt which both sealed the base while curing and provided a tack coat for the asphaltic concrete wearing course.

As shown by the accompanying photographs, each front-end hopper used for spreading soil-cement consisted of a bulldozer blade with attached side wings mounted on sled shoes which traveled on the subgrade. The hoppers were open at the bottom, and the blades and side wings were supported on the sled shoes at the proper height above the subgrade to strike off the soil-cement to 8-in. thickness prior to compaction. Dump trucks backed against crossbars at the fronts of the hoppers to discharge their loads of soil-cement mixture.

Cement-treated base was laid in alternate 20-ft. lanes, the space between lanes being paved after an





**FIFTEEN PNEUMATIC TIRES**, six on truck and nine on roller, compact 4-in. layer of sand-shell in two-course construction of stabilized base, used over major part of landing mat area.



**FOLLOWING WATER APPLICATION**, spray nozzle puts on seal coat of asphalt emulsion.

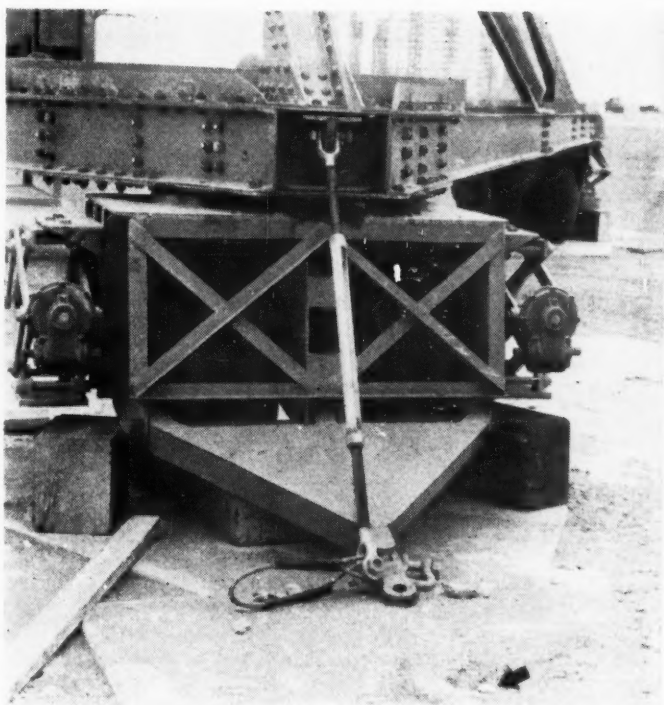
elapsed setting period of one week. Slight irregularities and cracks in the base were corrected by the cold-mix asphaltic concrete top course, which provides a smooth surface for operation of mobile mooring masts.

Located on a relatively high section of low, flat coastal plain, the site of the landing mat was only 15 to 19 ft. above sea level. Mounds about 3 ft. high and 50 ft. in diameter were common in the area. Known locally as "gas mounds," these hummocks consist of a sandy loam with a fairly high content of organic matter. Topsoil on the area is essentially the same material to a depth of 18 in., followed by a thin

*(Continued on page 176)*



**WHERE SUBGRADE IS POOR**, base for landing mat is constructed of truck-mixed concrete.



**IN MOORING-OUT CIRCLES** adjacent to landing mat, concrete anchor blocks provide embedded steel-rod eyes for fastening turn-buckle tie-downs of mobile mooring mast.



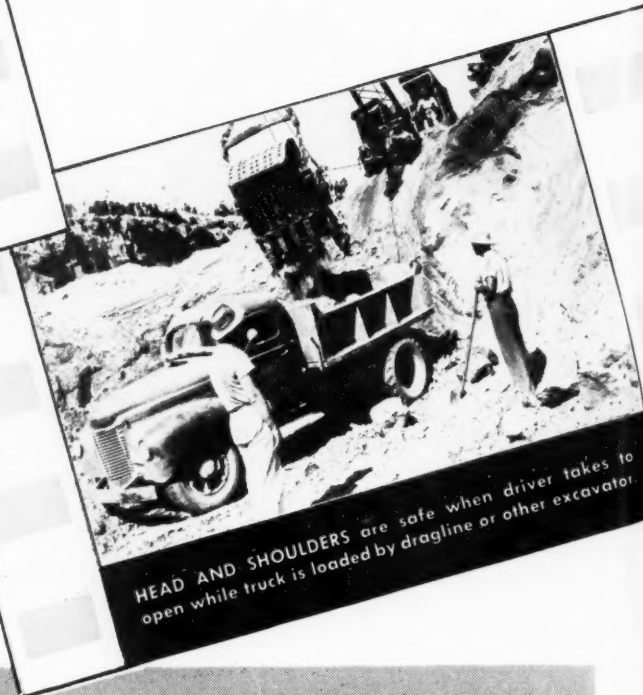
**TOP LAYER** of clay-sand-gravel for stabilized base construction is spread by motor patrol on sand-shell lower course.

**MULTIPLE LINES** of 36-in. concrete pipe (below) are laid in trench 300 ft. from edge of pavement to carry away stormwater runoff from landing mat.





BLOCKING UNDER BULLDOZER BLADE can save bruises and broken bones when a man repairs or greases this equipment.



HEAD AND SHOULDERS are safe when driver takes to open while truck is loaded by dragline or other excavator.

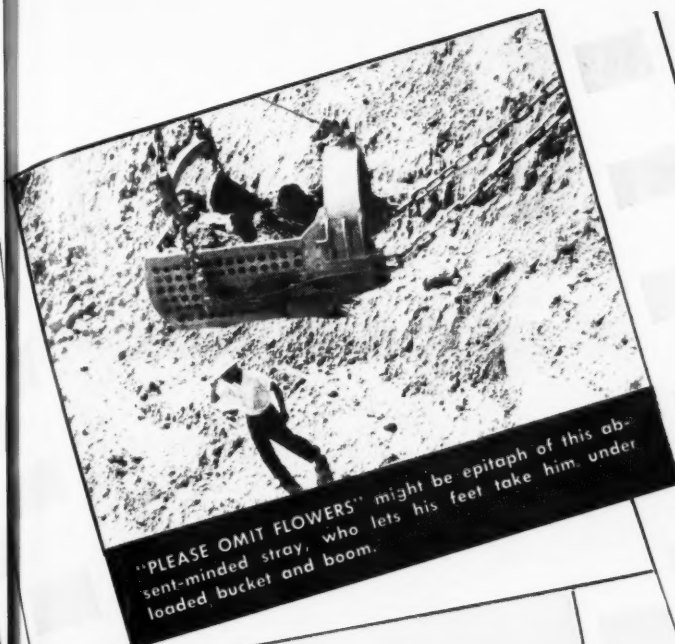
## CONSTRUCTION EQUIPMENT SAFETY IS TAUGHT BY NEW SLIDEFILM

HOW TO LIVE and be happy though working with construction equipment is the theme which penetrates into the minds of construction workers who view the sound slidefilm, "Construction Equipment Safety," obtainable from the Construction Section of the National Safety Council, Chicago 6, Ill. Accompanying photographs show the type of fare provided by the film—plain facts with no French dressing. By addressing eye and ear, the facts make a double impression on workers' minds and thus promote the automatic vigilance necessary to avoid common causes of accidents.

Pocket-size photostrip booklets can be purchased in quantity at low cost for distribution after each showing of the sound slidefilm. These illustrated booklets, with blueprint covers, help workers to remember what they have seen and heard.

Captions printed here were written especially for *Construction Methods*, and are different from those of the slidefilm script.





"PLEASE OMIT FLOWERS" might be epitaph of this absent-minded stray, who lets his feet take him under loaded bucket and boom.



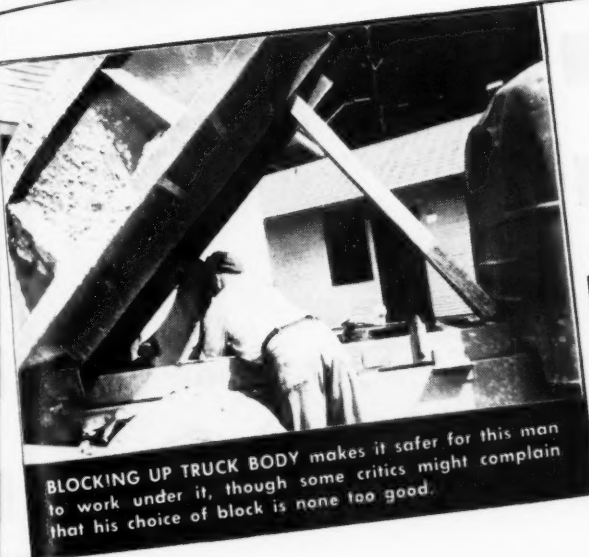
76  
REVOLVING CRANES are man-traps for careless chance-takers hidden from view of operators.



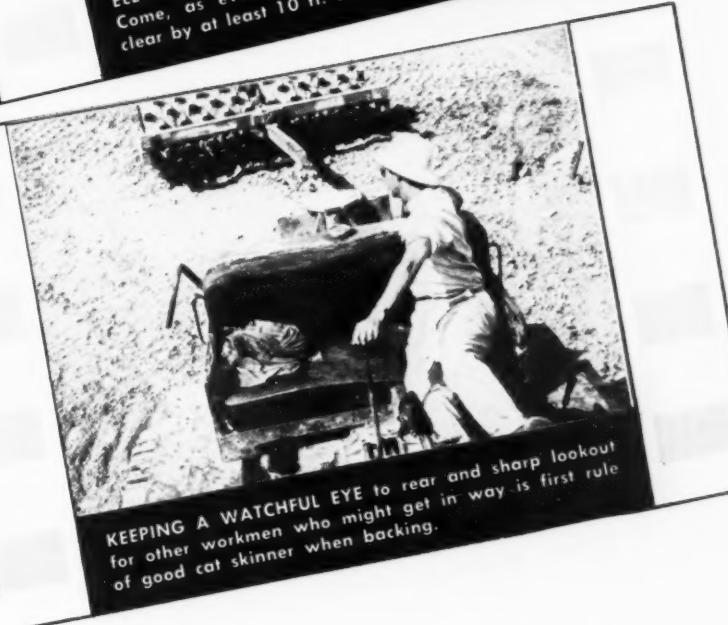
"PUT THAT THUMB where it belongs, under crank and not over it," is practiced habit of safety-trained worker.



ELECTRIC POWER LINES can kick man into Kingdom Come, as every operator knows. Keeping equipment clear by at least 10 ft. avoids danger.



BLOCKING UP TRUCK BODY makes it safer for this man to work under it, though some critics might complain that his choice of block is none too good.

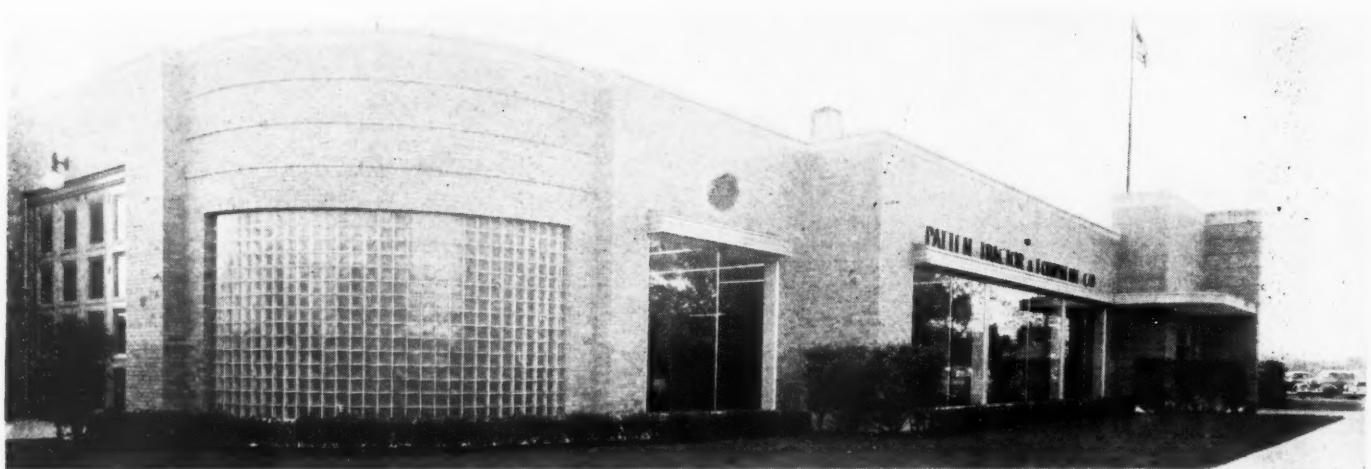


KEEPING A WATCHFUL EYE to rear and sharp lookout for other workmen who might get in way is first rule of good cat skinner when backing.



# TWO NEW PLANTS SHOW TREND IN DISTRIBUTOR FACILITIES

## *Patten Plant Country's Finest*



IMPOSING NEW OFFICE, parts and shop building for Patten Tractor & Equipment Co. in Bellwood, Ill. Glass and glass-block front shown here is all showroom. Offices are in other half of main building beyond entrance shown at extreme right.

PROBABLY THE MOST MODERN and finest distributor plant in the country is that of Patten Tractor & Equipment Co. dedicated and launched with appropriate ceremonies on June 4. The Patten Co., which handles Caterpillar and associated products, including Trackson, Athey and Hyster, located its new shops and offices in a 3-acre tract at 620 So. 25th Ave., Bellwood, Ill., a

western Chicago suburb. Patten's territory includes all of Northern Illinois and a part of Indiana.

Covering 40,000 sq.ft., the main building of modernistic design with brick, glass and glass block construction, houses the offices, showroom, theater, parts department, shipping and receiving and shops. A separate service building, covering 4,500 sq.ft., contains the track press

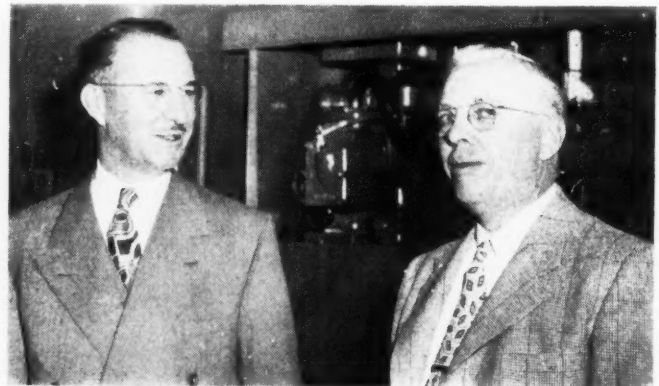
equipment and washing and painting facilities. A big paved back lot is for storage and railroad loading, though a storage building is planned for the near future. A depressed truck ramp brings the shipping room floor to truck bed level.

Half of the front of the main

**SPARK PLUGS** of the Patten organization are hustling sales manager E. C. McAllister (left, below) and general manager Ralph S. Patten.

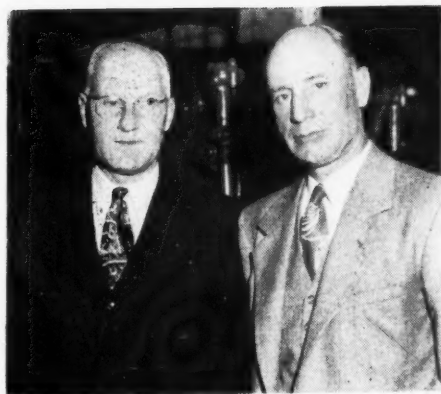


← **CATERPILLAR TRACTOR CO.** delegation attending Patten's dedication was headed by president Louis Neumiller (right), shown here with B. C. Patten, president of his firm.





CONSTRUCTION EQUIPMENT DISTRIBUTION has come a long way from the old days of open lot exhibits, shed shops and inside corner offices. Today machinery selling is big business and is an important part of construction operations. Recognition of this growing importance of distributor activities is given by numerous splendid new plants now being completed throughout the country to better serve the contractors. Examples are two sales and service facilities recently opened by Patten Tractor & Equipment Co. in Chicago and Contractors Machinery Co. in Detroit.



GEORGE H. DOERING, Patten vice-president, plays host to Al Wencel (right) of Nagle-Hart Tractor & Equipment Co., Madison, Wis.



GUESTS at the Patten dedication included Frank Ross (left), vice-president of Hyster Co., caught here telling a good story to G. M. Walker, of Caterpillar public relations.



TED FARLEY of Caterpillar (left) and big Lou Dauer, vice-president of Trackson Co., pose in front of a new Trackson shovel at Patten party.

building is devoted to a beautiful showroom while the other half is private offices flanking a large general office where a Kardex index system keeps track of the \$100,000 inventory of spare parts. Off the showroom is a 75-seat theater where films of equipment in operation are shown to customers. Behind the theater is a completely inclosed diesel injection repair and test room, where operations can be reviewed

from the theater side through a plate glass window.

The back of the main building is divided into two parts, one housing the shop equipped with overhead cranes, the other containing a systematic orderly parts department and the shipping room. Two bays of the shop are assigned to diesel engine and generator set testing and servicing, fitted with built-in floor rails for bolting down engines.

Patten Tractor & Equipment Co., an outgrowth of the old W. B. Lower Co., is headed by B. C. Patten. Ralph Patten is general manager, Geo. H. Doering is vice-president, E. C. McAllister is sales manager, P. E. Blacker is service manager, J. J. Jordan is parts manager and W. G. Vogelsanger is treasurer. Including salesman and service forces, the company employs over 50 persons.

## *Streamlined Plant at Detroit*

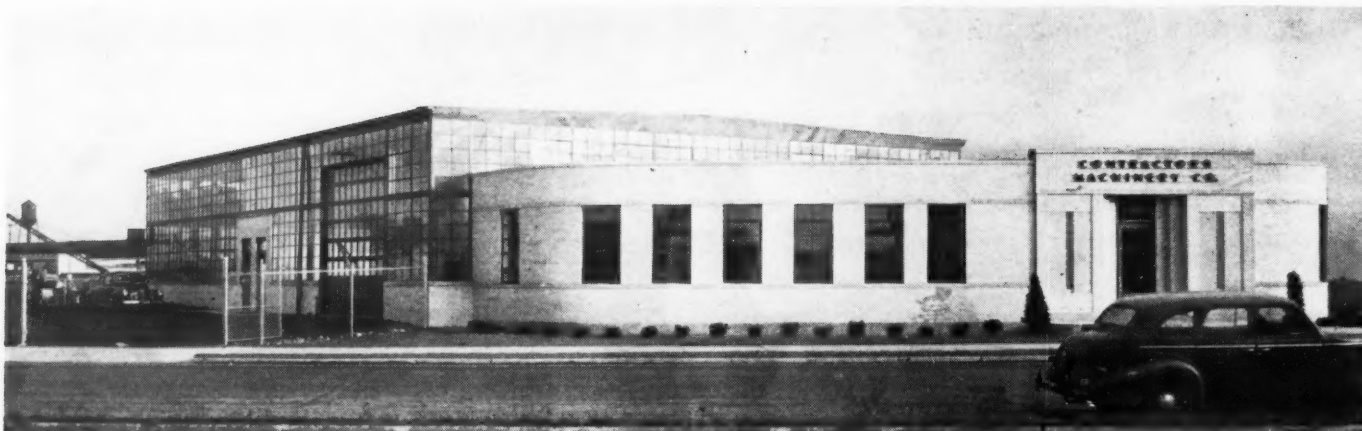
A NEAT, STREAMLINED OFFICE backed up by a full glass-inclosed display room, parts department and shop was recently opened up for the Detroit branch of the Contractors Machinery Co. at 333 Midland Ave., where vice-president Bert E. Uebele is in charge. The mail office, at Grand Rapids, Mich., headed by president George Swart, is also due for expansion and overhauling in the near future. From the two offices construction equipment and

supplies are distributed over most of lower Michigan.

Large equipment handled by this firm includes LeTourneau, Buckeye, Pioneer and Clyde Iron Works products, but by far the greater part of its line is made up of smaller items,

BERT UEBELE, vice-president of Contractors Machinery Co. in charge of Detroit branch, occupies office that would do credit to bank president.

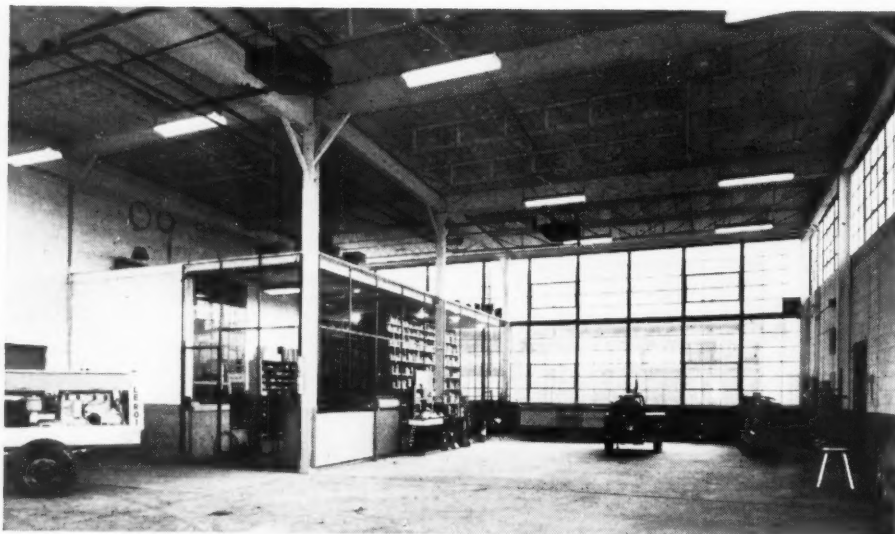




MODERNISTIC curved-front offices of Contractors Machinery Co. in Detroit are backed up by glass-walled parts room and shop.



BEAUTIFUL RECEPTION ROOM of new Contractors Machinery office soothes frustrated customers seeking hard-to-get equipment.



IN NORMAL TIMES this would be Contractors Machinery show room. Small, but orderly, parts department is housed in one corner behind screen. Shop, beyond wall to left, is part of same high, glass-wall building.

aggregating more than 80 in number, which call for a somewhat different type of plant than described above. Included in the list of companies represented are Aeroil Burner, American Steel & Wire, Barco, Chain Belt, Sauerman, LeRoi, Independent Pneumatic Tool, Vulcan, Jahn, Page, Complete Machinery, Murphy Diesel, Seaman Motors and scores of others.

The main office is a modern brick structure with a curving front. Flanking an attractive reception room are private and general offices. Behind the office section is a higher all glass and steel building 75x90 ft. which houses the display room, parts department and, eventually, the shop. At present, due to lack of shop equipment, the firm is contracting most of its repair work to nearby commercial shops.

Outside the shop building is a large fenced-in paved area for open storage. As the firm does a large rental business, units not in use are stored here.

In an effort to serve his customers in these times of equipment shortages, Uebele is buying up old units, some of them almost in the junk stage. These are completely overhauled and rebuilt for both sale and rental. In this program he doesn't stick to machinery lines he represents, but buys up anything available that can be fixed up for possible use.

Besides Swart and Uebele, the key organization includes W. H. Gordhomer, W. F. Bartholmae, Wm. Weimer and Al Stoddard, district sales managers, and H. F. Schoenwandt, secretary. Francis Helz and L. McEndarfer are service managers, and Darrell Ames is parts manager. The service staff is rapidly being built up with returning veterans.



# LEGAL ADVENTURES

## of TRACTOR CONN

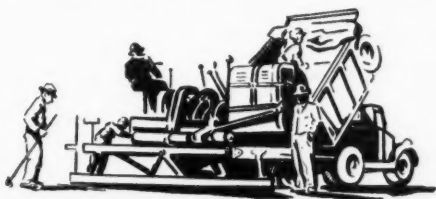


By **LESLIE JOBB**

No contractor ever tries to be his own dentist or his own shoemaker. It is even more dangerous for him to be his own lawyer. There are, however, some legal rules which every contractor should know, and these rules may be explained in plain English without resorting to the jargon of the law, unintelligible to most laymen.

This series of articles, dealing with the Legal Adventures of Tractor Conn, a typical contractor anywhere in the United States, explains some of these legal points in plain language for the contractor. Each one is based on an actual decision of an American Court.

### The Case of the Disputed Tax



any gasoline used in any motor vehicle not operated on a highway," a certain state statute provided. While the statute was in force Tractor Conn contracted to construct a piece of new road, used trucks in the construction work, and applied for the refund.

"When I built an entirely new road my trucks were not 'operated' on the highway, and it was not a 'highway' until finished and opened for public traffic," Tractor Conn contended. The South Dakota Supreme Court ruled in his favor in the case of *Allen vs Jones*, 201, Northwestern Reporter, 353, on the ground that the word "highway" does not mean "a mere right of way over which a road can be or is being constructed."

A few miles away from the new road, another road was badly worn out. Tractor Conn agreed to resurface it, used trucks to haul the necessary material, and ap-

plied, however, that any taxpayer shall be entitled to a refund of the gasoline tax paid by him on

plied for the same refund, but the Court ruled against him.

"The tractor or truck in which gasoline is being used as fuel used for hauling gravel for surfacing or repairing a highway, or a truck or tractor traveling on the highway, to and from the filling station, is being 'operated' on the highway," was the reasoning of the Court on this point.

### The Case of the Rush Job

When Tractor Conn agrees to erect a building for a certain price, and the owner agrees to pay that amount, the contract is based on a good "consideration", and either party may sue the other for a breach thereof.

In other words Conn's promise to build is a good consideration for the owner's agreement to pay and the latter's promise to pay

is a consideration for Conn's agreement to build.

On the other hand, if Tractor Conn says, "You're a good fellow, have had hard luck, and I'll erect the building for nothing," the owner cannot sue for damages if Conn changes his mind, as there was no legal "consideration" for Conn's promise to build.

This is a simple statement of an elementary legal principle, but, suppose, that a building contract has been drawn up and signed, and the contract provides that the building shall be completed by August 1. In May the owner approaches Tractor Conn, and asks if he cannot finish the work by July 1. He agrees to pay \$3,000 extra to speed up the work. By the end of June the building is as complete as Solomon's temple and Conn demands the extra payment.

"There was no consideration for my promise," the owner contends.

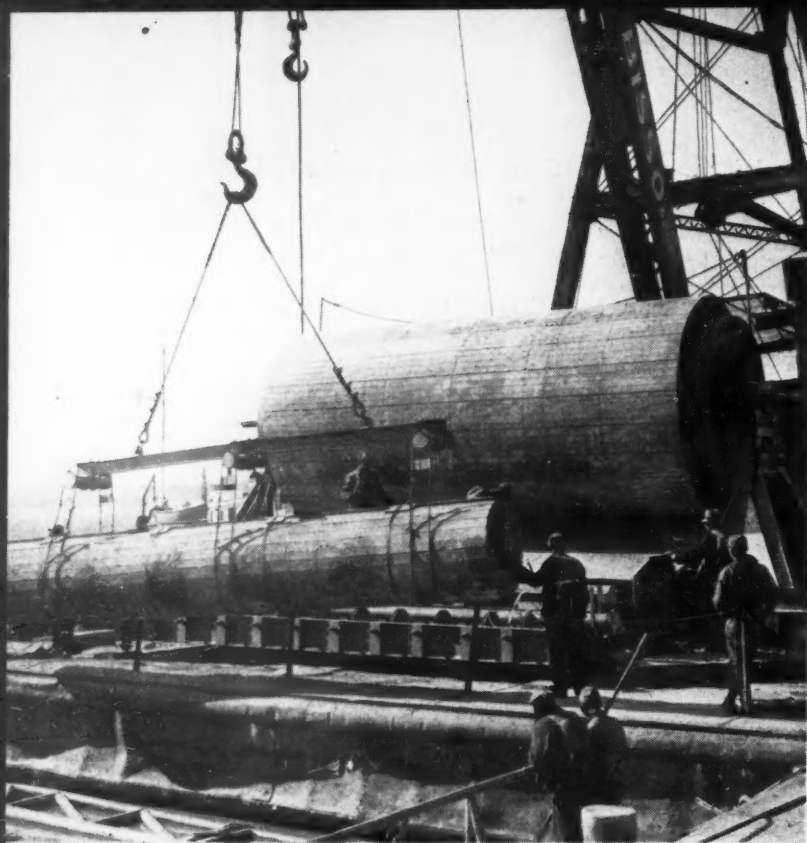
"Didn't I finish the building on the earlier date that you suggested?" Conn demanded.

"Yes, but according to the first contract, you were bound to complete the building; so all you were doing was agreeing to do something that you were bound to do anyway. My lawyer tells me that is not a legal consideration."

This point was important enough to reach the Indiana courts in the case of *Brownlee vs. Lowe*, 20 N.E. 301, where the decision was in favor of Tractor Conn, on the ground that when Conn agreed to finish the building on an earlier date, he was doing something that he was not otherwise bound to do.



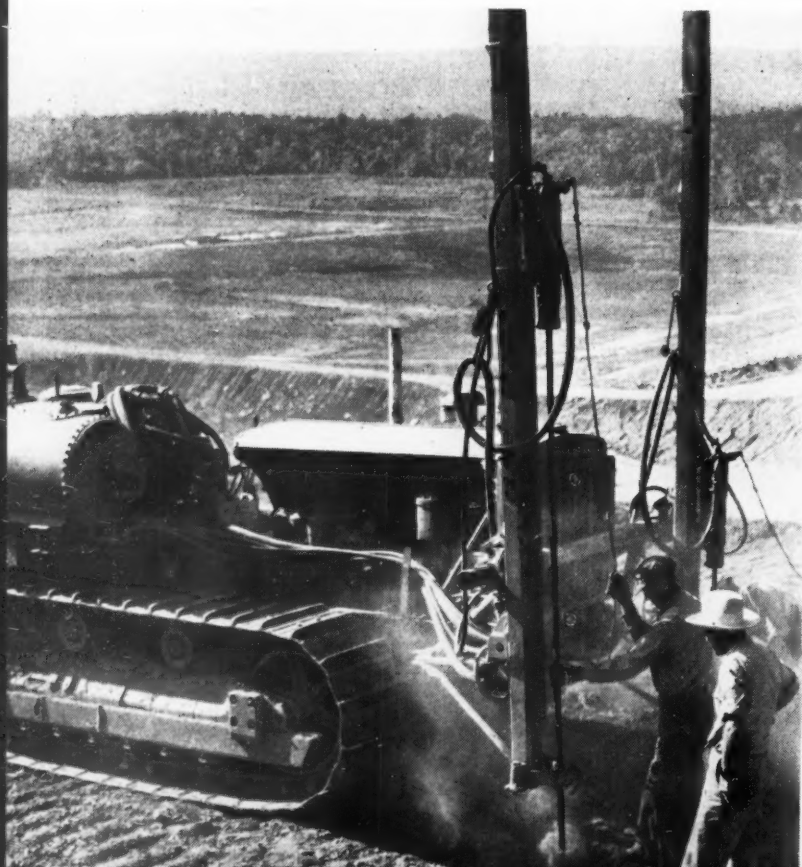
**More Legal Adventures of  
Tractor Conn Next Month**



**THIN FLEXIBLE CONCRETE MAT** of rolled type is placed experimentally by U.S. Engineer Department for bank revetment on Mississippi River. Reinforced concrete blocks in this mat are only 1½ in. thick, as compared with 3-in. block thickness used in past years. View shows unit mattress being swung into position by barge derrick for rolling on launching drum. Mat is later unrolled and sunk to form erosion-resistant blanket on sloping bank of river.

U.S. Engineer Photo from Lone Star Cement Corp.

**FOR DRILLING BLAST HOLES** in right abutment of Blue Mountain Dam, 82-ft. rolled earthfill structure 55 mi. southeast of Fort Smith, Ark., S. E. Evans Construction Co. mounts two drills and air compressor (below) on Caterpillar D-8 tractor as a double-barrel mobile wagon drill. Project, halted by war, was recently resumed under supervision of Little Rock District, U.S. Engineer Department. In background is reservoir area.

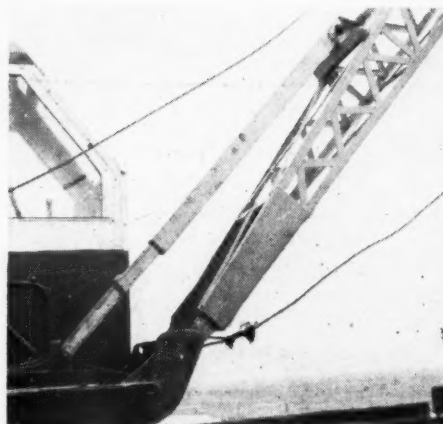


# HOW

## *They Did It*

### CONSTRUCTION DETAILS

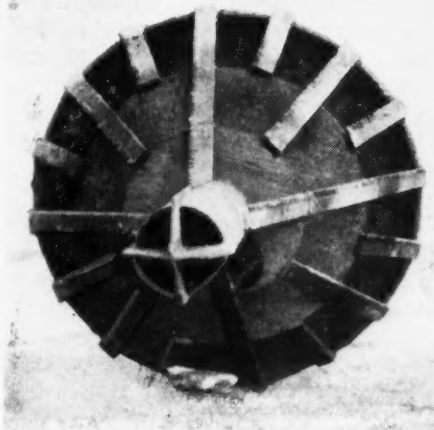
*For  
Superintendents and Foremen*



**CRANE BOOM STOP** (above and below) to prevent boom from tipping over backwards is installed on Browning truck crane by Ole Hansen, contractor, of Ventnor City, N. J. Stop is simply square shank, pivoted to top bed frame, which slides inside steel box-section fastened to top of boom. Telescopic assembly shortens as boom is raised and collar welded to shank checks box-section and thus prevents boom from rising above predetermined angle.



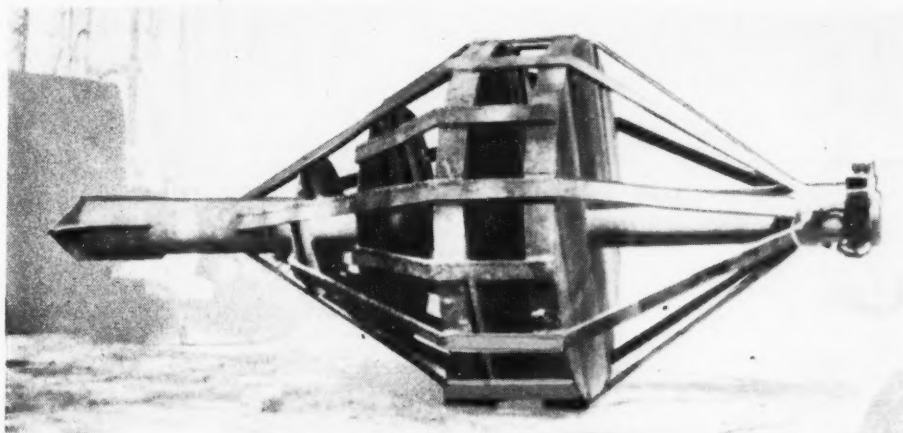




↑  
**GIANT REAMING BIT**, 20 ft. long and 7 ft. in dia., drills vertical mine shafts 228 ft. deep through water-saturated and unconsolidated material. Cutting edges of 7,000-lb. unit, developed and used by Layne-Arkan-



**SLIP SCRAPER** unloads gravel cars into trucks alongside on O'Dell & Riney's railroad relocation job for Missouri Pacific at Blackwell, Mo. Backward travel of small farm tractor hoists scraper and its load over side of car by snatch block on A-frame. Empty scraper is hauled back into car by manpower as tractor moves forward.



**CONVERTIBLE WATER SPRINKLER**, a special 5,000-gal tank on bottom-dump 21-cu. yd. Euclid wagon, is used by Utah Construction Co. for wetting down earthfill for compaction on Davis Dam on Colorado River. Tank is wedge shaped and fits into Euclid

sas Co., are hard-faced with Stellite. Hollow center shaft of bit carries drilling fluid to cutting head and projects ahead of reamer to guide unit through previously-drilled 2-ft.

pilot hole. Method of sinking shaft and placing 75-in. steel casing is similar to that used in drilling oil wells. This casing weighs about 400 lb. per lin. ft.

U. S. Bureau of Mines Photos

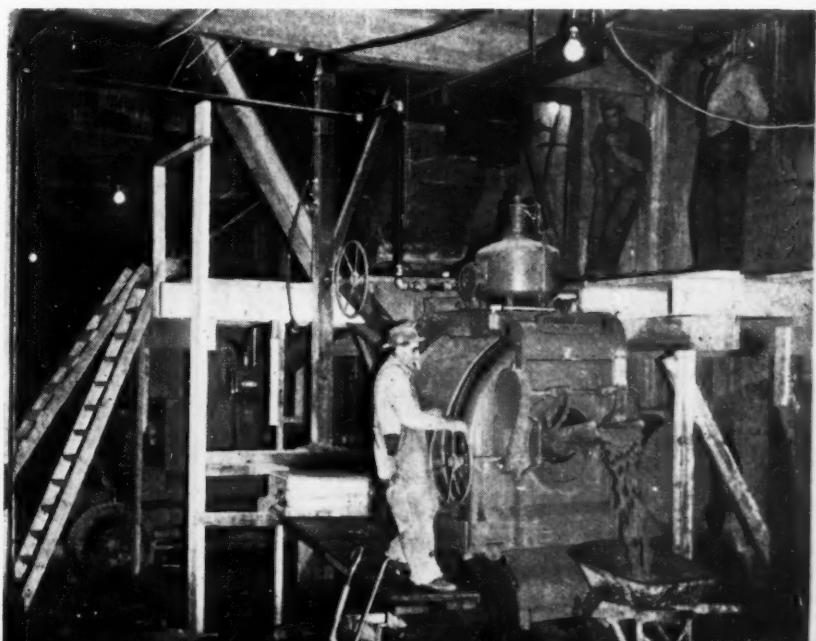
with no straps or tie-downs required to keep it in place. Convenient lugs welded on tank facilitate conversion of wagon back to an earthmover by uncoupling piping.



**BACKFILLING OF CUTS** by Southern Counties Gas Co., serving Los Angeles area in California, is speeded up by pull scraper (below) operated by cable reeved through sheave on end of bent pipe boom to Ingersoll-Rand air hoist on front end of maintenance truck. Boom is carried on truck and set up when needed.



**MIXERS IN SUB-BASEMENT** (below) are gravity charged with aggregates dumped by trucks on floor above into improvised hoppers. From hoppers sand and stone discharge into weighing batcher on monorail. Batcher moves to receive sand, gravel and cement and then to discharge to either concrete or mortar mixer on sub-basement floor. Job is 16-story hospital at Hartford, Conn., for which George A. Fuller Co. is contractor.



## Powdered Zinc Sprayed on Bridge Members



SPRAY GUN is used to apply powdered zinc protective coating, 1/100 in. thick, to portion of Golden Gate bridge. Powdered zinc from canister is forced through 1,600-deg. F. flame in gun and is sprayed at temperature of 785 deg. F. on to steel members. Hoses supply compressed air and gas for gun operation. Workman is protected and supplied with pure air by mask similar to those used by divers.



A COMPRESSED AIR GUN that forces powdered zinc through a hot flame and sprays the metal as a thin protective coating was used on a portion of San Francisco's Golden Gate Bridge in a test to determine an effective and economical means of preventing corrosion of steel members subject to salt spray action. The bridge members of a section of the approach span were first blasted with steel grit to remove all paint, scale and rust, and to leave the steel thoroughly clean yet sufficiently roughened to provide a good bond for the zinc coating subsequently placed by the Glaspray Process Co. A suction hose recovered excess grit and kept the working area clean.

Resembling a paint sprayer, the gun forced powdered zinc through a 1,600-deg. F. gas flame and sprayed the molten metal at 785 deg. on to the surface of the cleaned bridge members to form a coating 1/100 in. thick. The flame was sufficient to preheat the steel and to effect a fusion of the two metals. Spray-gun operators were protected from injurious effects by special safety masks and were supplied with pure air in a manner similar to that used in deep-sea diving.

The weight of the thin zinc coat is less than that of the five coats of lead and oil paint which have heretofore been used to protect the bridge structure. The cost of zinc protection is said to be greater than the cost of applying a coat of paint, but it is estimated that a single metallic coat will successfully repel corrosion for more than 8 years as against 2½ to 3 years for paint. The Glaspray process, which was used extensively during the war to provide a corrosion-resisting zinc coating on the interior of ships' tanks, is equally adaptable for use with other metals, as well as with glass or plastics.



ZINC COATING (left) is applied in place by masked workmen using Glaspray guns after bridge members have been cleaned by steel-grit blasting. Process demonstrated on San Francisco structure was used successfully during war to protect ships' tanks from corrosion.



## Conference Plans

# THREE E'S OF HIGHWAY SAFETY

ENGINEERING, EDUCATION, ENFORCEMENT—the three E's of highway safety—were discussed at the three-day highway safety conference held in Washington, D. C., May 8-10, at President Truman's request and attended by more than 1,800 people. Included in the far-reaching plan of action adopted to cut traffic accidents was a 12-point engineering program, as well as greater emphasis on safety education and traffic law enforcement.



PRESIDENT TRUMAN outlines to opening session great need for increased safety on nation's highways.

CHAIRMAN OF COORDINATING COMMITTEE for conference is Commissioner THOMAS H. MacDONALD (below) of U.S. Public Roads Administration.



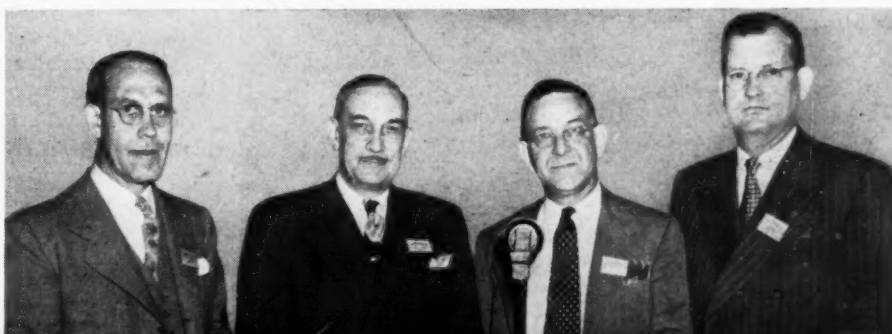
DIRECTING ACTIVITIES of meeting are (left to right) MAJ. GEN. PHILIP B. FLEMING, Federal Works Agency administrator and general chairman of conference; COL. LIGHT B. YOST, of office of Secretary of War and executive director of conference organization; LIEUT. COL. KIRK A. KEEGAN, technical assistant to conference staff; and SIDNEY J. WILLIAMS, general manager, National Safety Council.

PEDESTRIAN PROTECTION AWARD of American Automobile Association is presented to CLAUD R. McCAMMENT (right), safety engineer, Kansas State Highway Commission, by AAA President H. J. BRUNNIER.



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FORUM DISCUSSION (below) of methods for making streets and highways safer is provided by (left to right): T. J. SEBURN, president, Institute of Traffic Engineers, and city traffic engineer, Kansas City, Mo.; LESLIE J. SORENSON, vice-president for traffic and transportation, National Safety Council and chairman, Chicago Street Traffic Commission; GEORGE KENEIPP, recently appointed director of vehicles and traffic, Washington, D. C.; and RAY H. LEAVITT, regional vice-president, American Association of State Highway Officials and chairman, Utah State Road Commission.





WELDED EXTENSION on underside of grader blade cuts trench for asphalt concrete pavement widening. Note cleanliness of cut in wake of scraper. Farm tractor (left) compacts trench bottom and rolls completed pavement with one flat-tread steel wheel substituted for conventional pneumatic tire.

SPREADER BOX mounted on front of tractor places asphalt. Mix is dumped from trucks into hopper and moved by screw conveyor to discharge end of spreader.



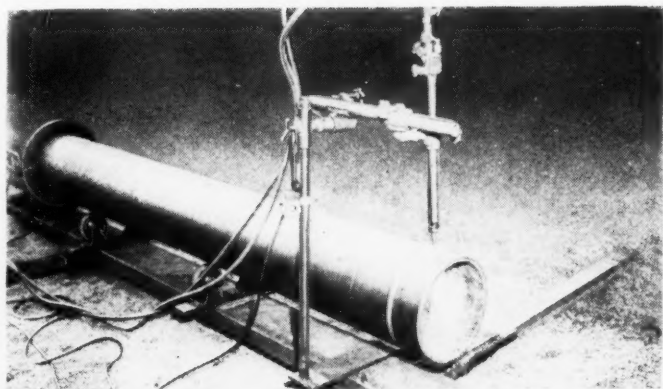
## ALTERED EQUIPMENT

### Speeds Road Widening

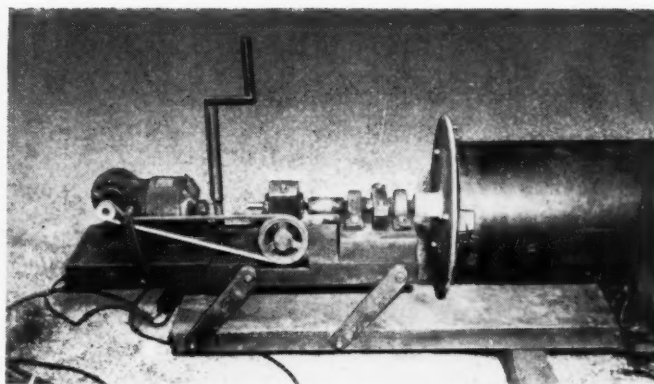
HIGHWAY WIDENING between Silver Lake and St. Mary's, Kan., was expedited by altering standard equipment to lay a 2-ft. asphalt pavement strip on each side of an existing concrete slab. The Kaw Paving Co. of Topeka, Kan. welded a steel plate under the right side of a Caterpillar No. 12 diesel motor-grader blade to cut away the previously scarified shoulder to a width of 30 in. and a depth of 8 in. below existing pavement. An ingenious alteration of a farm-type tractor replaced the right rear wheel and tire with an oversize flat steel wheel for use as a roller for compacting the sub-base and paving. A 1½-in. layer of chat was spread and rolled in the cut after which the asphaltic concrete was placed by a hopper and spreader-box attachment on the front end of Caterpillar D4 tractor. The mix was dumped from trucks into the hopper, where a screw conveyor operated by a power take-off on the tractor, moved the material to the spreader-box. Depth of material was regulated by crank screws on the spreader strike-off plates. The asphaltic concrete pavement was placed in two rolled courses and the joint at the existing pavement was sealed with liquid asphalt.



## Shop-Made Machine Cuts Steel Pipe



PIPE ROTATES on roller-bearing casters mounted on brackets that are clamped to 10x2 $\frac{3}{4}$ -in. channel. Blowpipe is adjustable to any desired angle by arm and adaptor.



ELECTRIC MOTOR connected to gear-reduction unit rotates pipe by driving plate or chuck. Drive mechanism is raised and lowered by screw and crank.

Linde Air Products Co. Photos

OXYACETYLENE PIPE-CUTTING MACHINE, which can be made at low cost from easily obtainable materials, will cut steel pipe of any wall thickness and a wide range of sizes with a high degree of accuracy. As described in Linde Air Products Co. "Oxy-Acetylene Tips," it is driven by an electric motor connected to a gear-reduction box by pulleys and a V-belt and then by shafts directly to the driving plate or chuck. The driving plate holds the pipe by angles and setscrews that are adjustable for various diameters. A toggle arrangement provides vertical adjustment of the driving mechanism for aligning with the centerline of the pipe. The driving mechanism is raised and

lowered by a screw and crank. This machine can also be built for hand operation.

The pipe rotates on two pair of rubber-tired roller-bearing 5-in. casters, mounted on brackets so that they can be moved closer to the driven end of the pipe as the pieces are cut. As the pipe rotates, it is cut by an Oxyweld C-39 blowpipe mounted on a vertical support by a blowpipe arm and adaptor from an Oxyweld CM-15 cutting machine. The vertical support is welded to a bracket similar to the caster brackets. An electric control switch is attached to the vertical support in a convenient position. The whole setup is mounted on a 10-in. channel.

## Quonset Huts Go to College

RETURNING GI'S will feel at home on the Rhode Island State College campus, since 80 Quonset huts are being installed to relieve a housing shortage at Kingston. These war-tested units have been leased from the government to provide comfortable quarters for veterans attending the college. Each hut will accommodate eleven students.



"RHODY VET ROW" is name of first block of Quonset huts erected on college campus. Veterans have already moved into these

31 units, each of which can accommodate 11 students. Six huts are joined to form 500-seat dining room.

Wide World Photo

# OPA IS DYING— ... *what next?*

**I**T IS NOW clear that direct price control of the OPA type is on the way out, if not by legislative limitation then by administrative collapse.

It is equally clear that we are by no means past the danger of a swirling upsurge of prices.

Then does it follow that the passing of OPA need be tantamount to a decision to let 'em rip? It does not.

While the OPA machinery is grinding to a stop, we can bring into play more fundamental measures to keep prices within safe limits—and to allow private management a wider area of freedom. What this article proposes is a framework of control within which private business judgment can operate. Therefore, this preamble speaks directly to our friends in the business community.

Now is a time for unrelenting self-restraint by business management. As price control disintegrates, business must scrupulously hold to prices which, after covering costs, yield *normal* profit margins. Business has everything to lose and nothing to gain if its price policies emulate the excessive wage demands made by some unions.

True leaders of business sense the danger. They do not want to price themselves out of their markets. They do not want the tag of price hogs. They do not want a buyers' strike. All management must practice the self-restraint which characterizes the wisest leaders among us.

## What Wasn't Done

Virtually all responsible economic analysts agree that if direct price control is eliminated and nothing else is done, prices will move upward. The only serious disagreements are: How far? And for how long?

Some careful and competent forecasters believe that, if all price control is lifted, the official cost of living index will shoot up at least 25 per cent within a year. Some of them think that wage rates will chase right after prices, forcing new price increases until the whole operation ends in a dizzy crash.

Others agree that prices will go up all right, but they think that increased production, made possible by disentanglement from OPA red tape, will bring them down again fairly soon.

Recent developments seem to support those forecasters who think that wage increases would

chase right after price increases and thus keep "the inflationary spiral" spinning toward a ghastly fall. Unions already agitate for a new round of wage increases to offset price increases which have occurred in the few months since the last round of wage increases.

Therefore, the prudent course would have been to clean up the OPA price control system, to keep it in place for a limited period as a stop-gap, and, meanwhile, to arrange to replace it with more fundamental controls, PROVIDED the federal government itself stopped promoting excessive wage increases. *The greatest single contribution to the wrecking of the OPA has been the holes driven in price ceilings by government-promoted wage increases.*

But now the stop-gap is being eliminated, and the fundamental controls are not in place. Their erection becomes urgent.

## The Basic Task Now

The danger that prices and wages will get to chasing each other around a ruinous spiral arises, of course, from the accumulation during the war of an enormous sum of money that could not be spent because about 40 per cent of the nation's production was being devoted to war. Men were paid wages and profits for making artillery shells. The shells were exploded. The money remains. It has piled up until the people's backlog of cash spending power, in one form or another, exceeds \$225 billions—three times the total in 1939.

More than that, banks hold \$115 billions of government securities—a sixfold increase since 1939. These securities can serve as the basis for an expansion of bank credit of many times their volume. A dollar of bank credit will, of course, buy as much as a dollar of cash.

The first and basic task of preventing runaway prices is: *Get this huge accumulation of purchasing power, actual and potential, under some kind of effective control.*

A second task is to see that no unnecessary additions are made to the flood of purchasing power overhanging the market. A third task is to get the productive machinery of the country running at top speed so that it can take up the accumulation in an orderly way, not in a boom-bust sequence. We shall talk here only about the first two of these tasks.



Are there ways of getting at the root cause of a disastrous wage-price spiral which are being neglected? There are many of them. Attention has been distracted from them by building up the battle over OPA as the Armageddon of price stabilization. It is important. But it is not Armageddon. If everything that Mr. Bowles and his associates want done by way of price control legislation were done, the problem of price stabilization would still remain unsolved in the continued absence of a program to deal effectively with root causes.

### Basic Remedies

Here is a rough outline of the key elements of a basic program.

1. Cut public expenditures to the bone and let tax revenues accumulate as business volume increases—perhaps broadening the tax base at the same time.

Now, if ever, is the time to run a surplus and to use it to retire debt. Immediate upward pressure on prices would thus be removed and the burden of carrying debt when the going gets tougher later on would be relieved. A \$10 billion surplus of federal, state and local revenues during the next year might not be too much.

An increase in social security taxes, as the House Ways and Means Committee proposes, offers one of a number of good ways to increase revenues. Deferring public works not immediately needed affords one of numerous ways by which substantial cuts in expenditures can be made.

2. Tighten the terms on which installment credit is available for the purchase of houses, automobiles, and other consumers' goods.

Allowed to run a free course, expansion of credit to buy houses and durable consumers' goods might easily add \$15 billion to consumer purchasing power next year. No such injection of credit is needed now. The more a man buys "on time" the more cash he keeps to spend on something else. For most products the cash market alone is more than big enough to keep producers busy and customers healthy.

3. Restore to the Federal Reserve system its lost control over the supply of credit by limiting the opportunities for credit expansion now afforded by huge bank holdings of government securities.

The specific measures needed are highly technical, but are agreed upon by banking experts as both feasible and fair. The important thing for the public at large to do is to recognize that we are, in effect, sitting on a powder keg with lighted match in hand until the measures are taken.

4. Revive a vigorous campaign to sell government savings bonds and other government securities to the public.

Sale of government savings bonds cuts down current consumer spending. It also allows the Treasury, if government spending is held down, to retire government bonds which the banks hold. Thus, it simplifies the problem of keeping bank credit within safe bounds.

5. Prevent a speculative inventory boom of the sort which preceded the post-World War I business collapse in 1920-21.

This involves a continuation of the loose controls of inventories now exercised by the government. In more important degree it involves well informed cooperation by bankers and business men to keep inventories from being expanded unnecessarily.

6. Maintain controls on exports in order to keep within reasonable limits the impact on our market of huge foreign demand.

Emergency foreign relief requirements must be met. But foreign demand which is enormous apart from relief requirements must be kept under control until the danger of having it send prices of export products soaring is past.

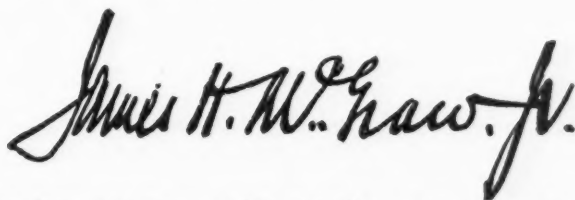
### Breathing Space for Business

This program would deal with causes, not symptoms. Hence, if promptly and efficiently installed, it would do a far better job of keeping the general level of prices and wages within tolerable limits than the OPA type of price control ever could have done—even if OPA had not been so often and so badly mismanaged. The program would also do this without tying up American business in a myriad of irritating and discouraging individual regulations. It would establish broad bounds within which business enterprise would be free to be itself, not a branch of bureaucratic enterprise.

The program proposed here also has the major virtue of flexibility. If prices start to reverse their present upward course within another year, the major parts of the program can be adjusted or removed quickly.

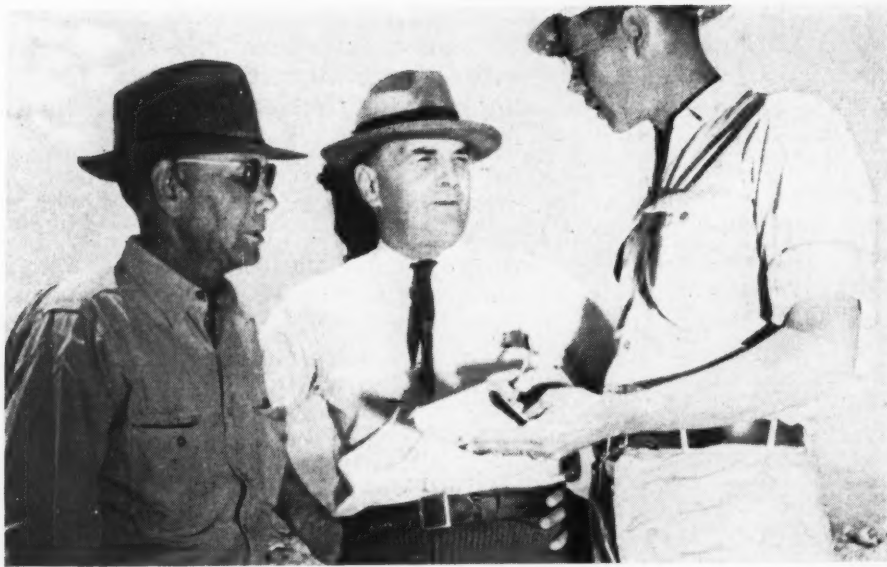
It would be gratifying to suggest junking at once all arrangements designed to place limits on price movements, even broad limits of the sort here suggested. But to do nothing while OPA falls apart, would be to run the grave risk of a runaway of prices and wages which, in the inevitable collapse, would do irretrievable damage to the business community and to the whole nation.

The risk is not worth taking.



President, McGraw-Hill Publishing Company, Inc.

# Present and Accounted For...A PAGE OF PERSONALITIES



**THREE TOP CONSTRUCTION MEN** of Utah Construction Co.'s staff on Davis Dam project hold field conference in early stages of work. They are (left to right): **JACK LLOYD**, excavation superintendent; **T. L. TERRY**, general superintendent; and **BILL LLOYD**, chief field engineer. This is \$21,000,000 contract.



**NAMED ASSISTANT CHIEF** of Navy Department Bureau of Yards and Docks and deputy chief of Civil Engineers is **REAR ADMIRAL JOSEPH F. JELLEY, JR.**, who has served at Pearl Harbor; Norfolk, Va.; Washington, D.C.; Alameda, Calif.; Chicago, Ill.; Davisville, R. I.; San Francisco and San Pedro, Calif.; and in Fifth Naval Construction Brigade in Pacific area.



← **IN CHINA** as chief engineer of consulting group for Morrison-Knudsen Co., Inc., is **R. A. TUDOR**, former district engineer at Portland, Ore., for Army Engineer Corps. Firm has contract with Chinese government for comprehensive survey looking to recommendations for reconstruction and extensive expansion of national railroad system.

→ **GEORGE S. BARTLETT AWARD** for 1945 has been given to **FREDERIC E. EVERETT**, commissioner of highways of New Hampshire. Award is joint presentation of Highway Research Board, American Association of State Highway Officials and American Road Builders Association to recognize achievement in highway field.



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**PREFABRICATION PRODUCTION BRANCH** of National Housing Agency is directed by **JAMES L. PEASE** (below), president of Pease Woodworking, Inc., of Cincinnati, Ohio. He is former president of Prefabricated Home Manufacturers Institute.



**RECENTLY RETIRED FROM ARMY** to become vice-president of Chas. H. Tompkins Co., Washington, D.C., construction firm, is **BRIG. GEN. DAVID McCOACH** (below), U.S. Army Engineer, who had been commanding general of Sixth Service Command, Chicago.



**ELECTED PRESIDENT** of New England Road Builders' Association at 25th annual meeting is **HAROLD R. BROWNSON** (below), vice-president of Rowe Contracting Co., of Malden, Mass., and president of Massachusetts Crushed Stone Association.





# THERE'S A *Timken Rock Bit*

## FOR PRACTICALLY EVERY KIND OF ROCK



The R series; a bit used in soft formations such as limestone and sandstone.



The F series; a sturdy bit designed to achieve fast drilling by virtue of its small gauge.



The H series; a general purpose bit for light and medium weight drills adaptable to any popular hollow drill steel section.



The M series; an intermediate bit to the H and D series, designed largely for mining with heavy-duty equipment.



The D series; a bit used with heavy drilling machines and large section drill steels.

Introduced fourteen years ago, the Timken Rock Bit of today bears a remarkably close resemblance to those on the market in 1932. Improvements have been made—streamlined then, it's more streamlined now; heavy wing sections have become heavier—but basically it's the same design. Fourteen years' experience has confirmed its correctness.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**ROCK BITS**



**PAPER DRINKING CUPS** end strike on construction of 60-apartment building in Cambridge, Mass. Carpenter **OSCAR GRASLIE** (right) walked off job in protest against old-fashioned tin pail and dipper and was joined by other workmen. Work was resumed when Contractor **MAX BERGER** (left) promised unending supply of cups.

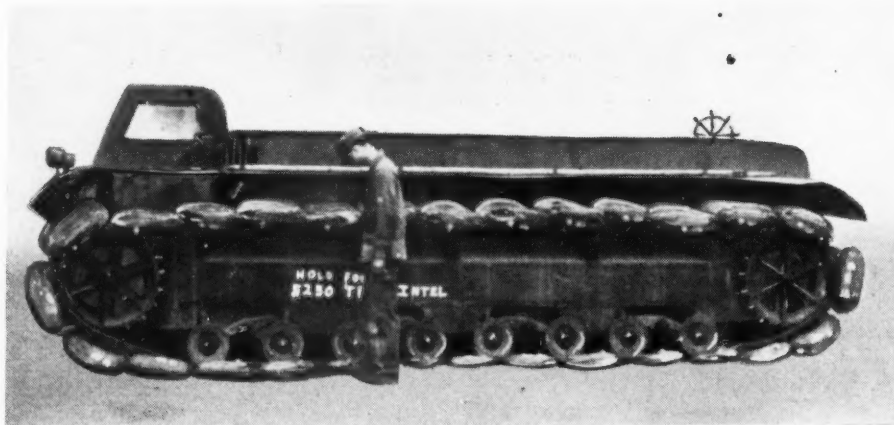


**"QUEEN OF IRRIGATION"** is crowned for parade in Madras, Ore., celebrating initial delivery of water to farms on Deschutes project of U.S. Bureau of Reclamation. Seated with queen and her princesses on float is **GOODRICH W. LINEWEAVER**, of Washington, D. C., director of Bureau's Branch of Operation and Maintenance.

# JOBS oddities



**OKLAHOMA'S KIOWA TRIBE** adopts **HERMAN A. MacDONALD** (left, below), president, American Association of State Highway Officials, and **THOMAS H. MacDONALD** (right), commissioner, U.S. Public Roads Administration, as honorary members in ceremony conducted by **CHIEF JASPER SAUNKEAH** at Oklahoma City. They received war bonnets and new names—Dom ate ton keah, meaning Pilgrim Father from Plymouth Rock, and Ho on oye keah, meaning Father of Great Trails.



**JAPANESE ARMY SWAMP CROSSER** has rubber bladders attached to track treads to enable amphibious vehicle to float over mud and to add to its buoyancy in water. Because bladders give each track about 37 sq. ft. of bearing surface on level ground, this 5-ton crawler can carry 5 tons of cargo. Unit, 19½ ft. long, is powered by 65-hp. air-cooled gasoline engine and when afloat is maneuvered by steerable propeller mounted at rear. Bladders are inflated to 3- to 5-psi. operating pressure within 10 sec. by foot-operated bellows (top photo).





**ANOTHER JOB "WELL DONE"**

# **WITH ATLAS MORTAR CEMENT**



► Plant of Frisby Machine Company, Freeport, N. Y. Architect, George Foster; Atlas Mortar Cement furnished by C. Milton Foreman, Freeport.

The smooth performance of Atlas Mortar Cement wins praise from both masons and contractors. Its buttery consistency—without soaking or slaking—makes easier, faster handling. And Atlas Mortar Cement produces a satisfactory yield . . . an important feature, especially on large jobs.

Atlas Mortar Cement rates high in *all* desirable characteristics—water retention, volume change, neutral blending color, strength and durability. It is backed by years of research . . . complies with Federal and ASTM specifications for masonry cement.

## **ATLAS MORTAR CEMENT**

TRADE MARK REG. U. S. P. O. OFF.



Send for descriptive circular. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

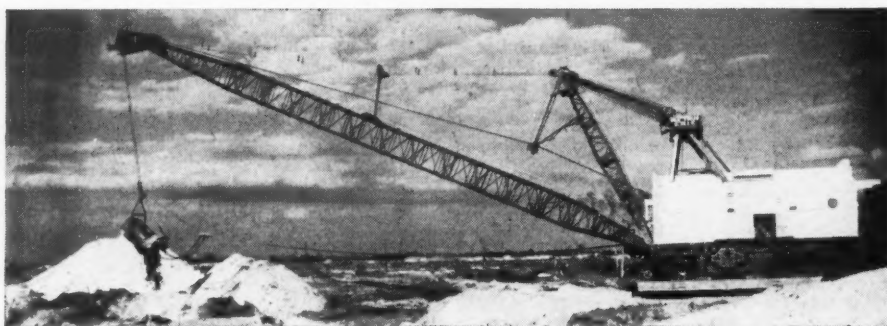
CM-MC-9

**OFFICES:** New York • Chicago • Philadelphia • Boston • Albany  
Pittsburgh • Cleveland • Dayton • Minneapolis • Duluth • St. Louis  
Kansas City • Des Moines • Birmingham • Waco

U. S. STEEL RADIO SHOW—*Sunday Evenings*—Consult local newspaper for time and station.

# CONSTRUCTION EQUIPMENT NEWS

## JULY 1946 REVIEW of Construction Machinery and Materials



**WALKING DRAGLINE**, 1150-B, is adaptable to deep stripping of mineral or coal deposits, levee work and other operations requiring long boom reach. Offered for electrical operations, it has Ward-Leonard, variable

voltage, rotating control. It swings 25-cu. yd bucket with 180-ft. boom and, with 250-ft. boom, will handle 14-cu. yd. bucket. Boom length and bucket size vary with type job.—**Bucyrus-Erie Co., South Milwaukee.**

**HYDRAULICALLY-LIFTED SCOOP** can move 1/3 yd. of gravel, snow or other loose material and is suitable

for clean-up phases of construction projects. It is loaded with forward shove of tractor. Picture shows de-



vice being tested by **GOVERN ARNOLD WILLIAMS** of Idaho **HOWARD E. HALL**, engineer manufacturer.—**Olson Mfg. Co., 20 Warm Springs Ave., Boise, Ida.**

**TORQUE CONVERTER TRACTOR** is again in production. Few trial units of this HD 14C diesel tractor had been produced before being stopped by war in 1941. Torque converter is essentially form of hydraulic power transmission installed between engine drive shaft and conventional gear transmission assembly. It consists simply of impeller, turbine and housing, all fitted with curved blades. Power from impeller shaft is transmitted to turbine, which drives transmission gears by hydraulic fluid acting against blades. Fluid is ordinary diesel fuel oil supplied by fuel tank. Conventional gear ratios have been reduced to three forward and one reverse, giving forward speeds up to 7.13 mph. and reverse travel up to 3.36 mph. For each gear ratio, however, torque converter gives infinite speed range from zero up to maximum of that ratio. Advantage of torque converter is application of maximum torque for particular load at any moment, resulting in smooth, easy operation without stalling of engine. Also, converter automatically results in top possible speed under each load condition. Because torque converter permits tractor to start its load from zero speed to maximum possible for power available smoothly and evenly without jerking, it is particularly advantageous on scraper pushers, on cable haul and on drawbar work. Overrunning clutch on converter throws tractor into conventional gear when running downhill pushed by load, thus bringing engine compression into action as brake. Clutch also permits starting tractor by pushing or towing.—**Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee, Wis.**

**POWER WINCH** is compact unit which can be easily mounted on trucks and trailers. Three sizes are available with 12,000, 18,000 and 25,000-lb. capacities. Power is provided by truck engine. Three convenient levers are located within cab. Each model is equipped with oil-cooled, fully adjustable automatic brake which makes it possible to operate winch with safety. Steel jaw clutch gives quick, positive action under all load stresses. Unit is built with cast integral worm gear which insures longer life and provides greater safety as there are no bolts to shear.—**Fruehauf Trailer Co., Detroit 32, Mich.**





## SMOOTH LANDINGS ASSURED WITH ADAMS GRADING THE JOB

★ Pictured above is a typical airport construction job, with an Adams Motor Grader building the landing strips.

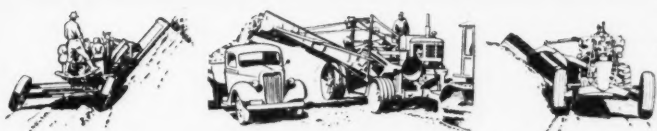
This particular job is on the Patton Brook Airport, Plainville, Conn., where three large landing strips are now under construction. With a main landing strip 600 ft. wide by 3000 ft. long, Patton Brook will be one of the largest privately-owned airports in New England when completed, capable of accomodating planes up to the Army's C-47.

In the course of the next seven years, thousands of airports are to be built or enlarged in

this country, under the CAA national airport program. Obviously, this is going to mean a lot of extra business for alert contractors. Many of these contractors will choose Adams Motor Graders for their work . . . because they know that Adams have everything it takes for smooth, accurate, high-speed grading—the kind that pays off in faster, better jobs and higher profits.

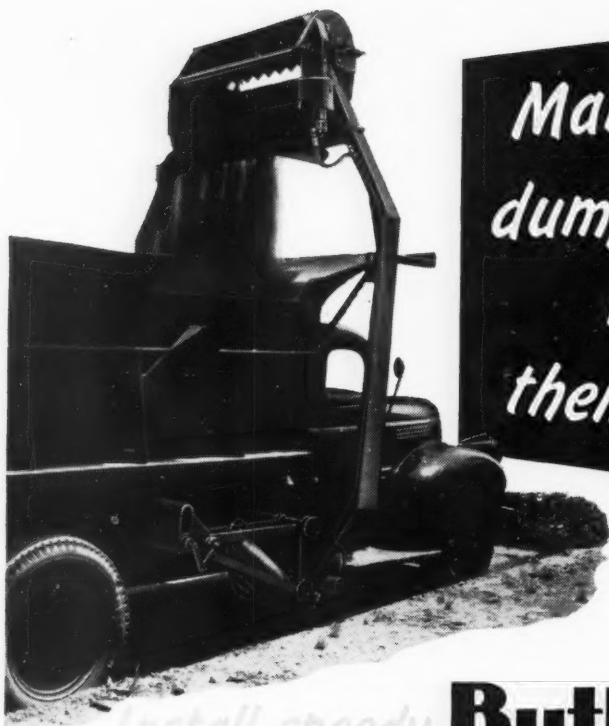
Get the complete time-saving, money-saving facts from your local Adams dealer. You'll find there are no finer motor graders built—at any price.

J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.



# ADAMS

ROAD BUILDING AND  
EARTH-MOVING EQUIPMENT



*Make your  
dump trucks  
load  
themselves!*

## Install speedy **Butler** **Truck Loaders**

**ONE TON  
PER MINUTE**

Eliminate labor and expensive, special loading equipment costs! Let Butler TruckLoaders do the whole job at **BETTER THAN A TON A MINUTE!** • Butler Hydraulically operated TruckLoaders are versatile, too . . . They build their own roads—load all kinds of loose materials—and, in addition, have a digging action similar to a scraper. • Remember also that Butler TruckLoaders can be quickly installed on your present dump truck equipment. Write for full descriptive literature.

### SPECIFICATIONS \*

SHOVEL WIDTH	4'
STRUCK MEASURE	12 CU. FT.
LIFTING CAPACITY	1400 LBS.
OPERATION CYCLE	25 SECONDS
WEIGHT (APPROX.)	1600 LBS.

\*All specifications subject to change without notice

**Butler**  
**ENGINEERING  
& MANUFACTURING CO.**

1052 West Sixth Street • Los Angeles 14, California



Loading street sweepings next to the curb



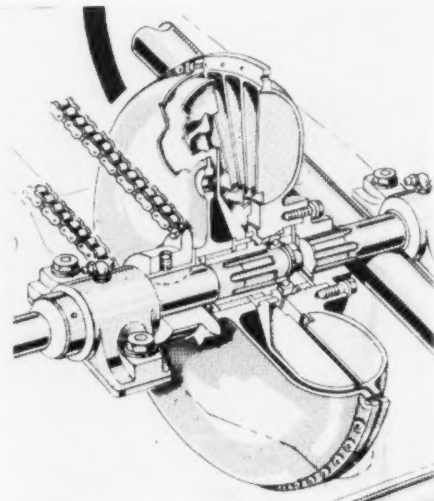
Sensitive control permits ease of operation



Shovel rides on load while traveling

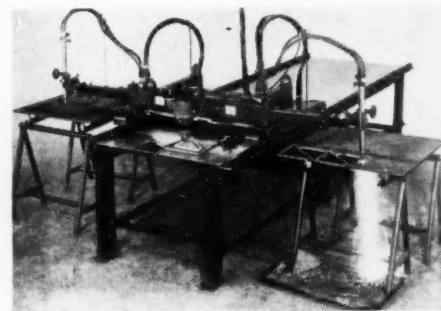
**Dealers Wanted!** Many exclusive sales franchises are now available throughout the entire U.S.!

**FLUID DRIVE COUPLING** operates on Vulcan-Sinclair principle, eliminating necessity for both transmission and differential mechanism. Unit



is self-contained and consists of three basic parts. Can be installed directly on shaft of any engine or electric motor and engages and disengages without human control. Slippage is said to be eliminated. Completely enclosed, it prevents entrance of dirt and dust.—**Toolcraft Mfg. Co., 2328 W. 7th St., Los Angeles 5, Calif.**

**SHAPE-CUTTING MACHINE**, designed to do precision cutting on work of intermediate size, has attachment which makes it possible to mount blowpipes on both sides of tracing table, which makes this CM-15-36 Oxweld oxyacetylene machine particularly adaptable to high production setups by permitting cutting of identical shapes simultaneously from plates on both sides. Plates can be



put into position on one side while cutting is being done on the other. All types of shape cutting can be done within 36 in. transverse working range. Longitudinal working range with standard table is 100 in. and it can be extended indefinitely by adding frame and table top section. Carriage is of cast aluminum, with two free-moving pivoted arms. Flat one-piece aluminum plate, 42x144 in., serves as table surface. Tracing head is powered by 110-v. universal motor.—**Linde Air Products Co., 30 E. 42nd St., New York, N. Y.**



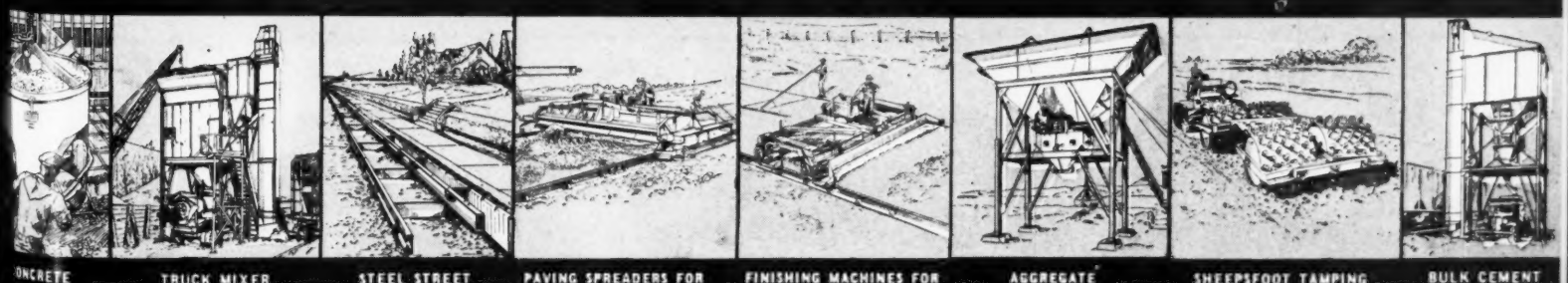
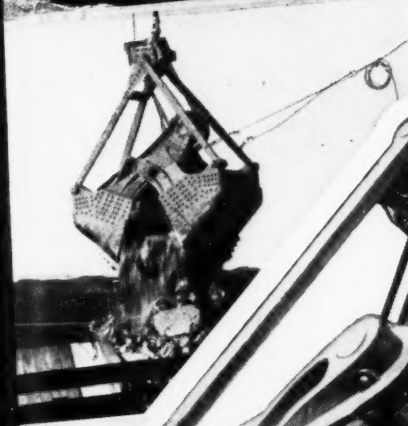
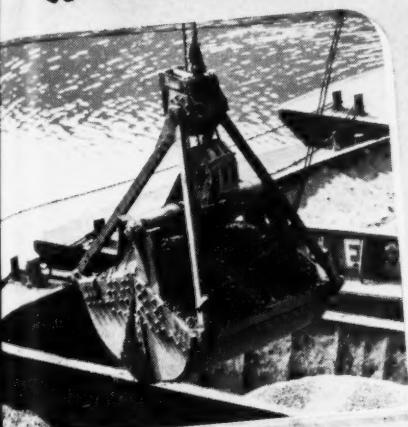
# You always get BLUE RIBBON PERFORMANCE WITH **BLAW-KNOX** **BUCKETS**

Good bucket performance means less time out for repairs and maintenance — constant pay loads on all kinds of digging and rehandling work — full utilization of crane capacities.

Catalog No. 1757 will show you how to select the exact bucket for your job. Send for it.

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CONCRETE TRUCK MIXER STEEL STREET PAVING SPREADERS FOR FINISHING MACHINES FOR AGGREGATE SHEEPSFOOT TAMPING BULK CEMENT



**LESSON IN *metal* ARITHMETIC!**

**Levinson Steel Sales Co.**

33 PRIDE ST., PITTSBURGH 19, PA.

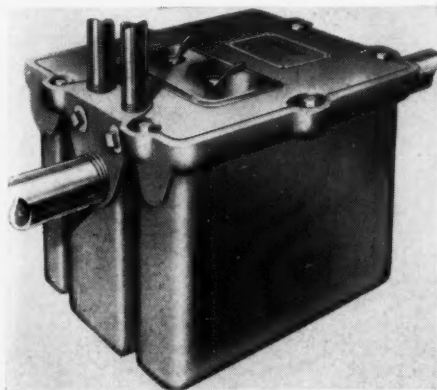


LSS-2

Structural Shapes • Plates • Checker Plates • Sheets • Strip • Hot Rolled and Cold Finished Bars  
Reinforcing Bars . . . also APS Plasteel Roofing • Bates Open Steel Flooring • Thorn Steel Windows

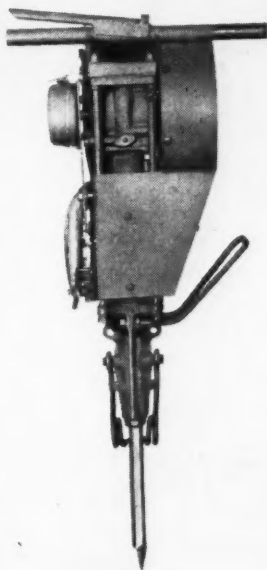


**DOUBLE-ACTING GREASE INTERCEPTOR** incorporates new feature—filtering of grease by grease—in addition to gravity differential separation. Said to be highly efficient in grease



salvage and to permit selective handling of all solids. Features include 90- to 95-percent operating efficiency; optional horizontal and vertical vent connections; lightweight aluminum cover; special hand fasteners. Available in wide range of sizes.—Wade Mfg. Co., Elgin, Ill.

**SELF-CONTAINED PORTABLE GASOLINE HAMMER PAVING BREAKER** has redesigned nose-end arrangement to utilize resiliency of spring-tool retaining clip, which eliminates solid latch mechanism previously employed and commonly used for retaining tool in this type of demolition hammer. Advantages of resil-



ient spring clip arrangement are: Providing easy spring action of tool itself when used at maximum over-travel; assuring quicker and easier method of changing tools used in hammer; and eliminating broken retainer latches and nose castings caused by lack of resiliency in retaining arrangement.—Syntron Co., Homer City, Pa.

## \* Time out for Flats?



Today's stepped-up construction program demands unfailing performance from all construction equipment. There's no time on your schedules for fixing flats.



## FAILURE-PROOF TUBE REPAIRS IN 15 TO 18 MINUTES on large breaks

In your own shop . . . or on the job . . . make truck and tractor tube repairs that are failure-proof . . . that stand up under tough conditions, both on and off the road. The new Inland Tube Vulcanizing Unit does a thoroughly safe and dependable job of tube repairs—faster and more economically. Large breaks repaired in 15 to 18 minutes. Handles tube injuries up to six inches long in one curing, on both natural and synthetic rubber, plus all sizes of valve

stem repairs and replacements.

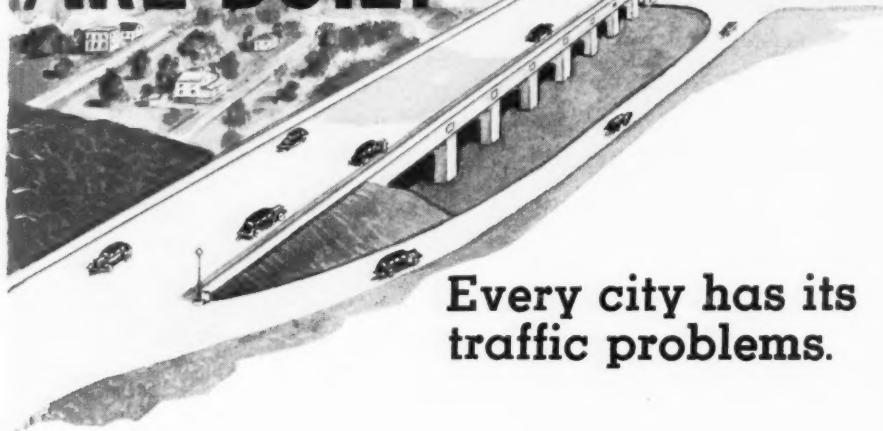
This new Unit consists of Inland's famous thermostatically controlled vulcanizing press PLUS a complete stock of gum, vulcanizing cement, accessories and tools. Easy to use; no experience necessary. Your automotive jobber has these Units in stock for immediate delivery. Inland Rubber Corporation, 33 So. Clark St., Chicago 3, Illinois. A subsidiary of Minnesota Mining and Manufacturing Company.

**BE SAFE**  
**USE INLAND**

Inland Rubber Corp. **INLAND**  
33 So. Clark St.,  
Dept. C67, Chicago 3, Ill.  
Please send me complete information  
concerning the Inland Tube Vulcan-  
izing Unit.

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Address.....  
Town.....

# WHEN EXPRESSWAYS ARE BUILT



Every city has its traffic problems.

Express ways are the answer and, as contractors, you will be called upon to build them.



That's when you need the help of your nearest AED Member. Call upon him—use his engineering staff—use his shop facilities—use his connections with manufacturers to get the machines you need.

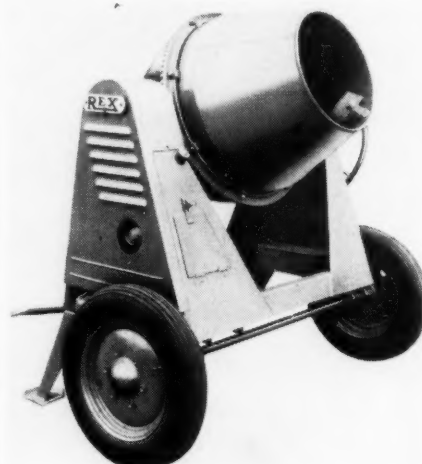
## ASSOCIATED EQUIPMENT DISTRIBUTORS

are the finest dealers in equipment in the United States, Canada and Mexico, all of whom have joined together to serve better the needs of the construction industry.

**BUY SAFELY—  
BUY FROM AN AED MEMBER**

**ASSOCIATED EQUIPMENT DISTRIBUTORS**  
1928 EYE STREET, N.W.  
WASHINGTON 6, D.C.

**TILTING MIXER**, 3½S end discharge model, has 62-in. wheel tread. Low center of gravity is obtained by cradling mixer body between wheels. Features include: Choice of two en-



gine sizes; inclosed roller chain motor-drum drive; all-welded pressed steel drum bowl; ring gear driving drum that can be easily replaced when wear occurs; 24-in. control handwheel equipped with safe ratchet-type lock; cantilever springs; and removable tow pole.—**Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis.**

**FINGER COTS**, made from selected grain leathers, provide rugged protection for both front and back of fingers and are designed to stay in place. One of new Sta-Set cots is useful wherever sensitivity of touch is important factor, such as soldering



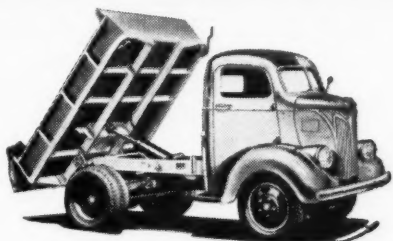
small wire and assembly work. Another, made from high-grade chrome leather tanned cowhide is recommended for jobs involving hard usage, such as polishing, burring and grinding small parts. Elastic strap in back at bottom permits freedom of movement.—**American Optical Co., Southbridge, Mass.**



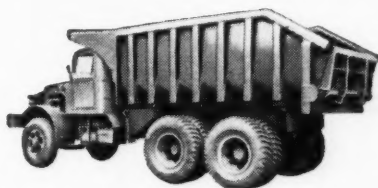
# The BEST COSTS LESS

TRADE MARK

For years Gar Wood has consistently offered truck and trailer equipment of utmost utility and outstanding value. Leadership in this field resulted from this policy. Gar Wood equipment costs less in the long run because it is better built to give peak performance and lasting satisfaction.



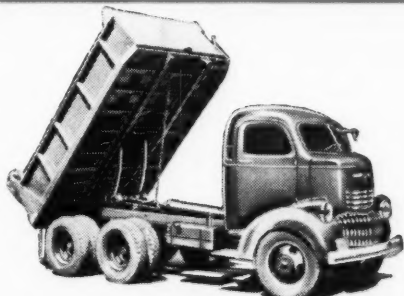
Type C12 Body and Model D6 or D7 Hoist. Dumping angle 55°.



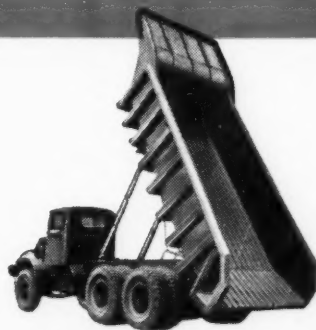
Type X-112 Extra heavy duty Body with automatic downfolding tailgate.



Special rock Body, scoop type rear end. Model F4CA cam and roller Hoist.



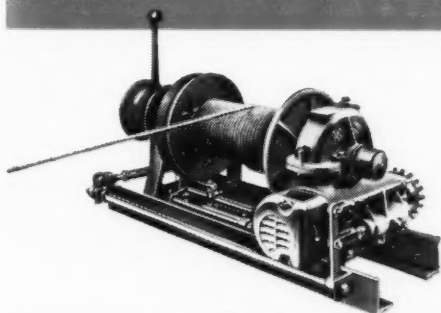
Type W12 Body. Model F4C cam and roller Hoist. Capacity 6 cu. yds.



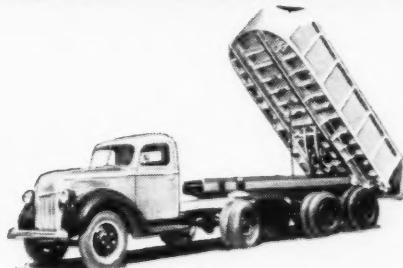
Type X-112 Extra heavy duty Body, scoop end, with Model T-4440 Hoist. Capacity 19 cu. yds.



Type W12 Body, front recessed for Model TV83 Hoist. Capacity 15 cu. yds.



Rapid Reverse truck Winch. Single lever control. Capacities 15,000 to 60,000 pounds line pull.



West Coast Special W-12 Body, Model F8C cam and roller Hoist. Capacity 10 cu. yds.



Telescopic boom Crane. Radius 8 to 20 feet.



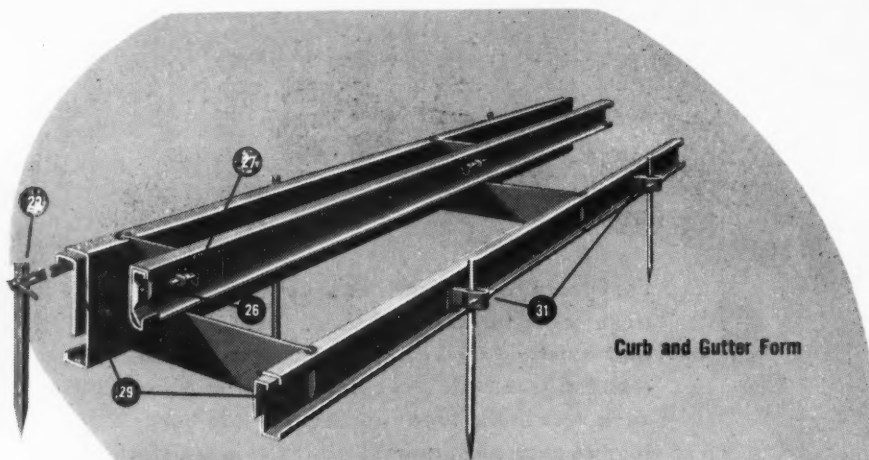
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WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

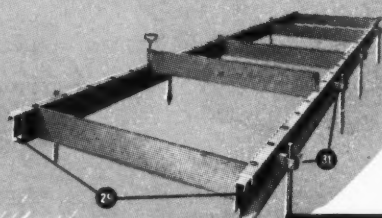
OTHER PRODUCTS: TRUCK TANKS ROAD MACHINERY HEATING EQUIPMENT MOTOR BOATS



Curb and Gutter Form

## Which HELTZEL FORM FEATURE DO YOU PREFER?

Sidewalk Form



- 22** Adjustable Lateral Braces and Anchor Stakes for use on rigid or flexible radius forms hold top of form in positive alignment.
- 26** No loose parts or clamps. Secure the face form to the division plate, slide the locks home and start to pour.
- 27** Face forms are quickly removed after the concrete has taken its initial set, by disengaging the lock. Skeleton division plates are provided with the same arrangement.
- 29** A sleeve welded on one end of the rail over which the adjoining rail fits, makes an absolutely tight even joint.
- 31** Round stakes securely locked to the form by the wedge key permit the form to be suspended entirely independent of the subgrade. Indispensable when subgrade conditions are not uniform.

You buy Heltzel Steel Forms once. They stay in service for 20 years or more and each job you set is as uniform as the ones before. The low cost of equipment per year of service plus benefits of faster work with the use of steel forms, nets substantial savings and more business.

**Heltzel**  
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BINS, Portable and Stationary  
CEMENT BINS, Portable and Stationary  
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TOOL BOXES  
FINISHING TOOLS FOR CONCRETE ROADS

C-36 BULK CEMENT PLANTS ☐ E-41 RECIRCULATING TANK ☐

Name \_\_\_\_\_

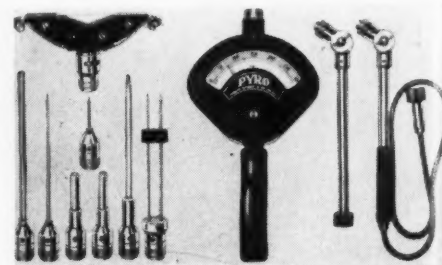
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

(Type of Construction usually engaged in)

**HELTZEL** STEEL FORM & IRON CO.  
WARREN, OHIO • U. S. A.

**SURFACE PYROMETER** is completely self-contained, portable, compact and quick acting. Constructed in shock-, moisture- and dust-proofed shielded steel housing, it is immune to external magnetic influences and



large 4¾-in.-dia. indicator with 4-in. direct reading scale offers ease in reading temperature. Internal automatic cold and junction compensator is standard equipment. Eight different thermocouples and two types of extension arms, instantly interchangeable without adjustment or recalibration, are available, with five different temperature ranges from 0-300 deg. F. to 0-1200 deg. F.—**Pyrometer Instrument Co., 103 Lafayette St., New York 13, N. Y.**

**BATTERY CHARGER-ARC WELDER** has complete separate control panels with instruments, one for each battery circuit and one for welding circuit. Model 496 is 300-amp. electric motor driven welder including



MGC panel circuit for charging one railway coach battery at maximum rate of 200-amp. at 50 v., d.c. Model 497 is 400-amp. electric motor driven welder including MGC panel circuits for charging two railway coach batteries at one time at maximum rate per battery of 150-amp. at 50 v., d.c. Welders are multi-range dual control electric drives with exclusive remote control. They may be readily switched back and forth from welding to charging.—**Hobart Brothers Co., Hobart Square, Troy, N. Y.**



# The Quality hardest to attain is...UNIFORMITY!



DIESEL FUEL ANALYSIS CONTROL LABORATORY REPORT #3428	
GRAVITY, °A. P. I.	
FLASH, P. M. c.c. °F.	
SULPHUR, % b.w.	
POUR POINT, °F.	
WATER AND SEDIMENT, % b.v.	
VISCOSITY SECONDS	
CETANE NO.	
ASH, % b.w.	
I. B. P. °F.	
90% RECOVERED °F.	
F. B. P. °F.	

...you can count on it  
in SHELL "DIESELINE"

**A**NALYSIS OF SHIPMENTS of Shell "DIESELINE" will reveal its month-after-month, year-after-year uniformity. It's this uniformity that enables Diesel operators to tune an engine's fuel injection system to that fine point which brings maximum economy—and to *hold it there*.

This same demand for unvarying quality causes Diesel manufacturers to be particular about the fuel they use in engine testing—and why so many prominent makers have standardized on Shell "DIESELINE"—not just for the past year or two, but for ten,

and, in the case of one of the leading engine makers, for *twelve consecutive years!*

Try this modern quality fuel in your engines for a month or two. Keep records and compare with the results you've been getting. Very likely you will be surprised at the top-notch, *consistent* performance you get from Shell "DIESELINE."

**For more information** about Shell "DIESELINE" and other Shell Fuel Oils, write to Shell Oil Company, Incorporated, 50 West 50th St., New York 20, N.Y.; or 100 Bush St., San Francisco 6, California.

## SHELL DIESEL FUELS



*after hundreds of hours*  
still fast-priming and non-leaking



*here*  
.....  
is the reason

**THE SEAL** that positively keeps the water in and the air out is a special Carver design that is specially suited for high pressure work and when handling dirty water—the higher the pressure the tighter the seal. Air is kept out of the pump so there's no loss of vacuum and high priming efficiency is maintained.

Carver self-priming centrifugal pumps are offered in a wide range of sizes from 1½" to 10" with either gas, Diesel or electric power. Send for Bulletin 101A. Dealers in all principal cities.

**CARVER PUMP COMPANY**  
**MUSCATINE, IOWA**

**CARVER** CENTRIFUGAL  
*Certified* PUMPS

The wearing surfaces of the Carver mechanical seal are made of tungsten-carbide—almost diamond-hard—and consequently are practically immune to wear.

**RUBBER - MOUNTED, MOBILE CRANE UNIT** embodies power shovel, trench hoe, dragline and clamshell. Among features are: Independent or simultaneous operation of boom, shovel or trench hoe or propulsion mechanism; ability to travel, boom, swing and hoist at same time; self-leveling chassis which permits operation on uneven ground; full-vision cab permitting operator to see in all directions; machinery gears inclosed and oil immersed; no center pin as



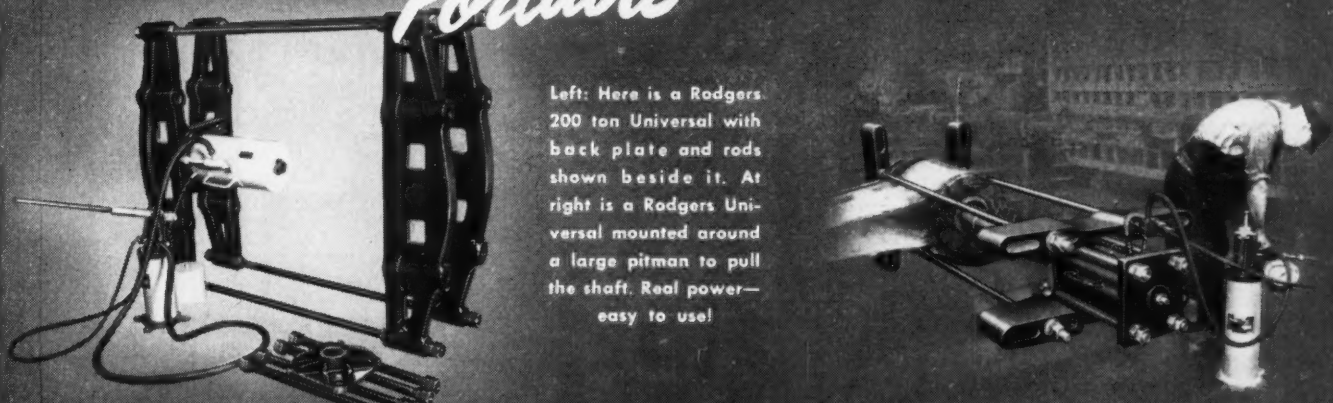
cab revolves on 48-in. ball race outside swing-gear. Power plant is 62-hp. gasoline engine which drives all four wheels and hoisting mechanism. Hoist drums are oversize, reducing cable wear. Unit complies with all highway regulations. Short wheel base—7 ft. 8 in.—gives greater maneuverability. Four travel speeds go up to 15 mph. General specifications are: Shovel, dragline, and clamshell capacity, ½ cu. yd.; capacity of crane, 4 tons at 10-ft. radius; boom length crane, clamshell or dragline, 30 ft.; shovel and trench-hoe boom length, 15 ft.; weight of unit with shovel, trench-hoe, clamshell or dragline, 25,000.—**American Steel Dredge Co., Wayne Crane Div., 2511 Taylor St., Fort Wayne 6, Ind.**

**TRUCK MIXER** has water system which insures fast, uniform distribution of specified mix-water to batch under all operating conditions. Clog-proof water jet is said to solve long-standing problem in high discharge truck mixers where water outlet is submerged in material and subject to clogging by grout. Pressure for water line is supplied by standard Jaeger "sure prime" pump. Use of positive pump pressure permits elimination of awkward overhead tank required for gravity operation. Mix and flush water tanks, mounted solidly on main frame, are protected from distorting stresses which affect accuracy of measurement and permit entire front end of mixer to be inclosed for weather protection and winter warmth.—**Jaeger Machine Co., Columbus 16, Ohio.**



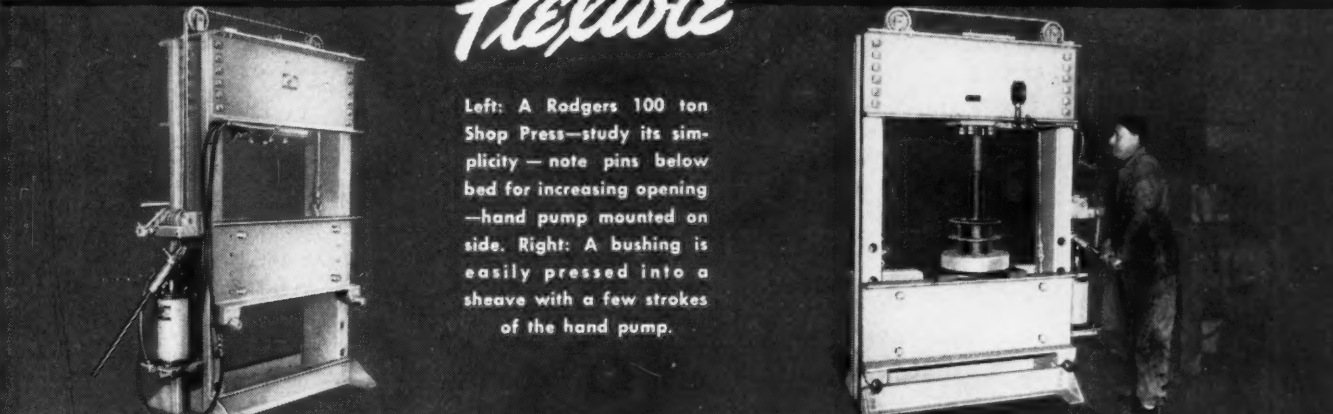
# 2 unusual hydraulic presses that can save you Time, Labor and Trouble on 101 maintenance, service and special jobs.

**RODGERS** *Portable* **UNIVERSAL PRESS**



Left: Here is a Rodgers 200 ton Universal with back plate and rods shown beside it. At right is a Rodgers Universal mounted around a large pitman to pull the shaft. Real power—easy to use!

**RODGERS** *Flexible* **SHOP PRESS**



Left: A Rodgers 100 ton Shop Press—study its simplicity—note pins below bed for increasing opening—hand pump mounted on side. Right: A bushing is easily pressed into a sheave with a few strokes of the hand pump.

**STOP** and think of all the uses you can find for these versatile Rodgers Presses—pulling gears, pinions and wheels; pressing shafts, bushings and pins, squeezing, clamping and jacking operations—wherever you need 50 to 200 tons of easily-applied hydraulic power.

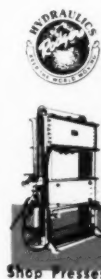
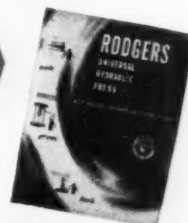
The Rodgers Universal is a unique portable unit for field or shop service. It is used on a stand as an ordinary press, on its side or flat and is easily assembled around equipment for special operations. Rodgers Hydraulic Hand Pump or Power Pump supplies power.

A Rodgers Shop Press is a flexible unit with a bed that is easily raised or lowered to accommodate various size work. Cylinder may be adjusted across entire width of bed. Rodgers Hand Pump or Power Pump furnishes pressure.

If you have equipment to service you can save yourself hours of time and labor with a Rodgers—they often pay for themselves on a tough job or two. Write for *all* the details. It will be profitable.

Send for this new catalog . . .

It will give you complete information on Rodgers Hydraulic Presses. No obligation, of course. Write today.



Shop Presses

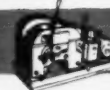
# Rodgers Hydraulic, Inc.

hydraulic power equipment



Crawler-Track Presses

7403 Walker St., St. Louis Park, Minneapolis 16, Minn. Power Pump Units



Portable Presses

*Which Gives--  
More Efficient Lifting?*

**ONE FINGER**



Concentration of power thrust in a small area increases strains of unbalanced loads. It requires more effort--and produces excess wear on a hoist and body.

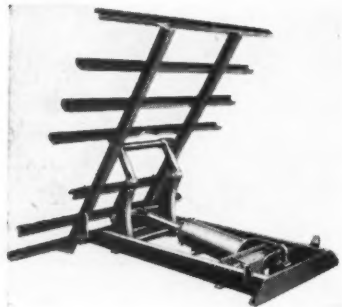
**OR**



Power thrust uniformly distributed throughout entire length and breadth of frame decreases strains of unbalanced loads--and minimizes wear on hoist and body.

**A WIDESPREAD HAND**

**NOTE** With PERFECTION'S scientific understructure construction, the power thrust from the hoist is delivered--not to a single bolster or small cross-member directly against the floor of the body--but first to the longitudinal sills which distribute the thrust to ALL bolsters. It is largely because of this superior design that PERFECTION'S record of performance and service is an enviable one.



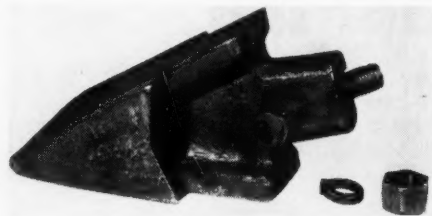
PERFECTION'S "Balanced-Power-Thrust" construction is standard on all stake and dump body styles with double compound lift arm hoists.

Built for all makes and models of trucks. Write for Bulletin and names of nearest Distributors.

THE PERFECTION STEEL BODY COMPANY GALION, OHIO

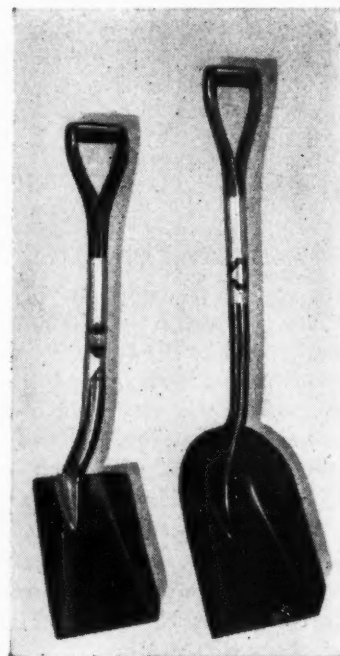
**PERFECTION**  
TRUCK BODIES AND HOISTS

**TOOTH POINTS** with reversible center shank for dragline service has specially designed hook bolt fastening to prevent bolt from wearing or



tearing loose from point. Maker claims point will never come loose or work off if 25-percent minimum bearing is maintained, both on stub ends and on shank above and below bolt head.—Page Engineering Co., Clearing Post Office, Chicago, Ill.

**WATERPROOF COATING** may be used on any rough, porous surface, particularly on concrete and on cinder block. Mixed with water, it paints out like oil paint, even on rough surfaces. Tite-Wall spreads easily with brush or new type of deep pile roller. It may also be sprayed with power sprayer. Available in white and five tints.—Truscon Laboratories, Inc., Caniff & Grand Trunk R.R., Detroit 12, Mich.



**BLADE EDGES**  
GUARANTEED SPLIT-PROOF

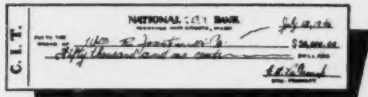
**INGERSOLL SHOVELS**  
"The Borg-Warner Line"

Write for Catalog and Prices  
INGERSOLL STEEL DIVISION  
BORG-WARNER CORPORATION  
New Castle, Indiana  
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

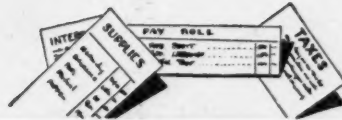


**THE C.I.T. CONSTRUCTION EQUIPMENT  
CONTRACTORS: PLAN HELPS YOU HANDLE MORE  
WORK PROFITABLY!**

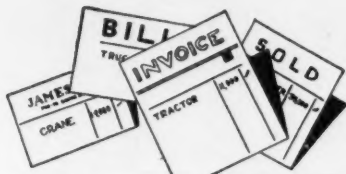
**HERE'S HOW THE PLAN UNFOLDS**



C.I.T. furnishes the funds to buy construction equipment. Any amount, promptly, **AT LOW COST.**



Conserves your funds for payrolls, supplies, materials. You may earn extra cash discounts.



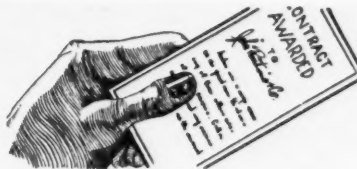
You can combine several purchases in one long-term obligation. Saves time, bookkeeping, money.



You replace obsolete, worn-out and inefficient equipment. Handle more work with less effort.



Equipment helps pay for itself out of earnings. Spread the cost over many months.



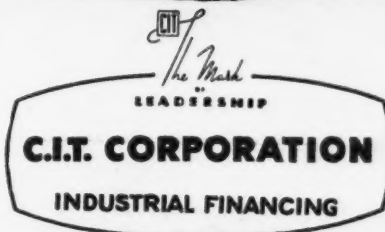
Enables you to increase your business... earn larger profits... bid on larger contracts.

When you buy any type of construction equipment, **LET C.I.T. FURNISH THE FUNDS TO COMPLETE THE TRANSACTION.** Use our resources to equip yourselves with the proper machinery... conserve your own funds to carry on construction. Repay our advance over many months... handle more work on your present capital.

**ANY OF THESE OFFICES ARE AT YOUR SERVICE...**

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**AFFILIATED WITH COMMERCIAL INVESTMENT TRUST INCORPORATED**



WHEN YOU'RE BACKING IN BATCH TRUCKS  
THAT *EXTRA FOOT HERE* COUNTS A LOT

● The skip of the Koehring 34-E *Twinbatch* Paver is 10 feet wide, approximately a foot wider than other paver skips. When you're backing batch trucks into a paver skip, fast, that extra foot means a lot. You're in and out just a little faster. And "just a little faster" means big money on a paving job.

For the Koehring *Twinbatch*, that big 10-foot skip is just right because the *Twinbatch* is a big, Heavy-Duty paver, almost 12 feet wide, weighing 60,400 pounds, and every pound working weight.

Double, continuous, self-equalizing cables raise the skip in 8 seconds. Each cable alone is strong enough to raise the loaded skip. Replaceable liners keep abrasive wear away from the skip throat. Welded lip, with extra tire tread plates, acts as a ramp, makes it easier for trucks to get into skip on a rough grade.

**KOEHRING**  
**34-E**  
*twinbatch*  
**PAVER**  
TWO COMPARTMENT DRUM

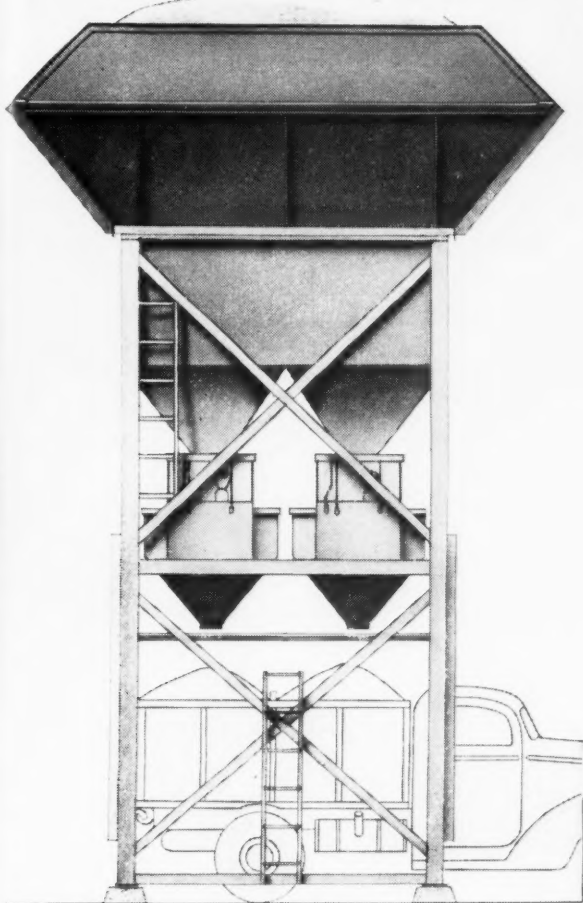
**KOEHRING COMPANY, Milwaukee 10, Wis.**

**HEAVY-DUTY CONSTRUCTION EQUIPMENT**





# NOW! 1-STOP LOADING FOR 2-BATCH TRUCKS



**AT YOUR AGGREGATE PLANT AS  
WELL AS YOUR BULK CEMENT PLANT**

With the new Johnson Dual Aggregate Batching Plant, you can now take full advantage of 1-stop loading of 2-batch trucks at both the aggregate and the bulk cement plant. Johnson Dual Aggregate Batching Plant discharges both batches into a 2-batch truck simultaneously. Extra "spot-stops" are eliminated. On most jobs, the number of hauling units can be reduced. 100 yard, 3 compartment portable section bin is equipped with 2 multiple material batchers. One operator controls both batchers. (Of course, all Johnson Bulk Cement Plants may also be equipped with 2 batchers—for 1-stop loading of 2-batch trucks.)



**THE C. S. JOHNSON COMPANY**  
KOEHRING SUBSIDIARY • CHAMPAIGN, ILLINOIS

## GETS BIGGER BITES *with* CLEANER BUCKETS

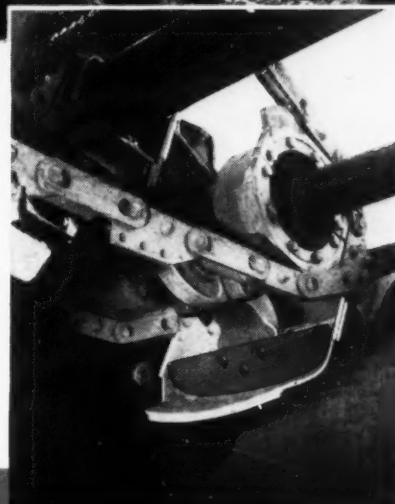
Clean trencher buckets take bigger bites. On the Parsons 250 Trenchliner each bucket that bites into the trench is clean. Spring loaded bucket scraper (see picture below) cleans out sticky materials as bucket load is dumped, leaves each bucket empty. Gumbo clay can't stick, can't cut down trenching efficiency. Here are more reasons why the bucket line on the Parsons 250 Trenchliner can dig more trench per day: 1. Light weight, high strength digging buckets have wear resisting cutting lips. 2. Bucket teeth are forged of abrasion-resistant alloy steel. 3. Same teeth are used for both bucket and side-cutters. 4. Excavator chain links are heat hardened. 5. Connecting pins are self-locking, have no cotters.



### PARSONS 250 TRENCHLINER



*Spring loaded bucket scraper scoops out sticky material. Cleaned-out buckets take bigger bites.*



**THE PARSONS COMPANY**  
KOEHRING SUBSIDIARY • NEWTON, IOWA



**T**HE combined research, production and distributing facilities of three famous companies are now offered to American industry by The Colorado Fuel and Iron Corporation. Thus, a new nation-wide service is made available in steel, wire products, and allied specialties under the trade-marks of Wickwire Spencer, Calwico, and CF&I—each a standard of industrial progress in its own right.

The East and Middle West will continue to be served by Wickwire Spencer Steel Division. The Colorado Fuel and Iron Corporation will serve the Plains and Mountain States with CF&I facilities as before plus the products of the eastern and western divisions. The California Wire Cloth Corporation (a subsidiary) will supply its own products and in addition the products of the other two divisions to Pacific Coast customers.

The well-earned reputation for quality which these three companies have enjoyed will be maintained in the new and greater Colorado Fuel and Iron Corporation.

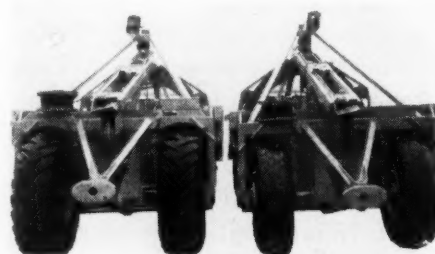


**TRACTION WHEEL** (below) is track-laying device that is interchangeable with wheel and tire rim assemblies or with tire rims, mounting on standard wheel in place of tires and rims. Designed to fill gap between pneumatic tires and crawler tracks, it provides many times more traction and flota-



tion than tires. Large flat area in contact with ground reduces strain on axles by bridging over ruts and chuck holes and forming incline over obstacles. Ground contact area ranges from 400 to 800 sq. in. Company's crawler tracks (above) are designed to meet gruelling service over rough terrain and in soft ground, sand, muck, etc. — **Henneuse Engineering Co., Marion, Ohio.**

**EQUIPPING** of Tournapull-drawn LP carryall scrapers with 21x24 tires (left) instead of 18x24 wartime tires (right) permits maximum loads to be transported with lower pressure in



tires. Change has increased scraper clearance approximately 4 in. Standardization of Tournapull and scraper tire equipment permits interchange between front and back tires.—**R. G. LeTourneau, Inc., Peoria, Ill.**

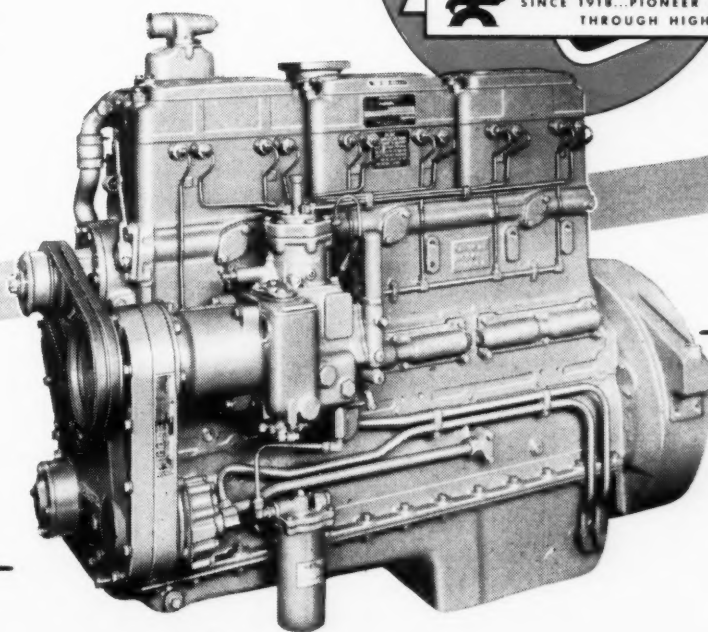


**Value**  
**ahead of volume**  
**assures**  
**the finest**

**CUMMINS**  
*Dependable*  
**DIESELS**



SINCE 1918...PIONEER OF PROFITABLE POWER  
THROUGH HIGH SPEED DIESELS



**CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA**

# Helps You Avoid Work Stoppages!



SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation



## Here's Complete Lubrication Service — specifically designed to help you meet and beat contract dates!

**Question:** Having too many *unscheduled* work slow-downs and stoppages — due to equipment failures?

**Answer:** We can help you minimize "down-time" — keep hard-pushed machines operating full-tilt, full-time — by supplying you with exactly the right oil or grease for every application.

**Question:** Having trouble finding a maintenance plan that fits your *individual* requirements?

**Answer:** Our representative supplies you with tested maintenance schedules quickly and easily adaptable to *your* operating methods — *your* type of equipment — *your* maintenance set-up!

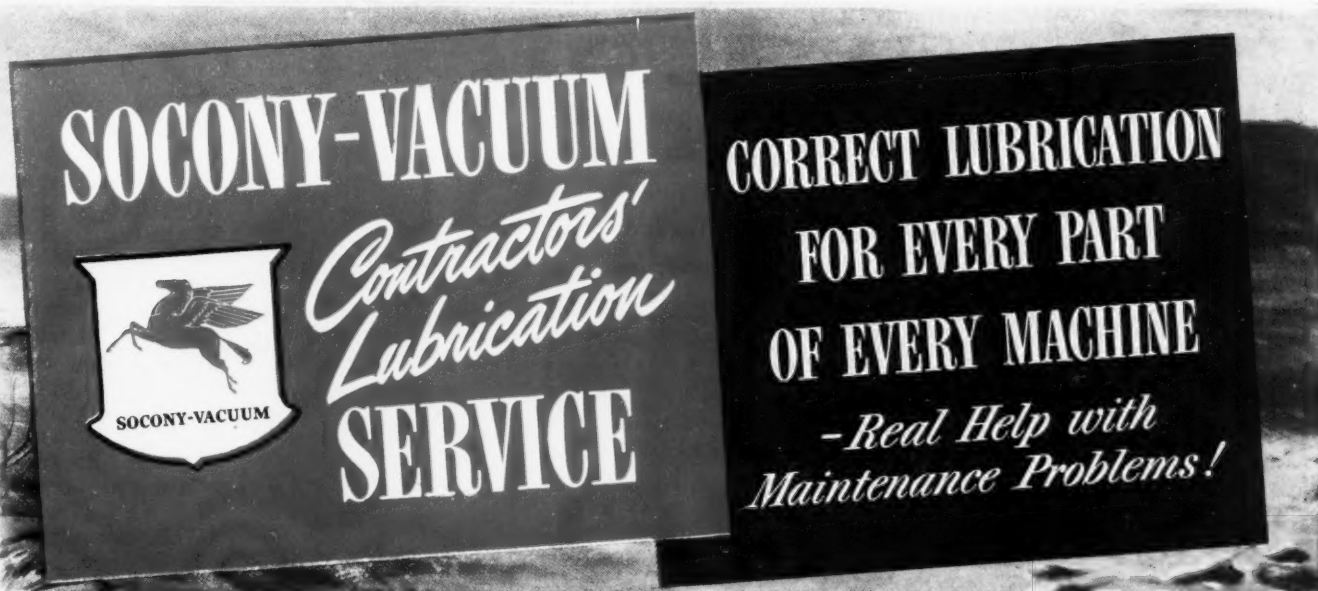
**Question:** Does machine refueling and lubrication eat up too much valuable time in the field?


**Answer:** We arrange on-the-job deliveries *wherever* you locate. This means fewer field interruptions, fewer inventory problems — minimum bother with rush orders, follow-ups.

**Question:** Are "problem" machines tying up other equipment . . . slowing vital operations?

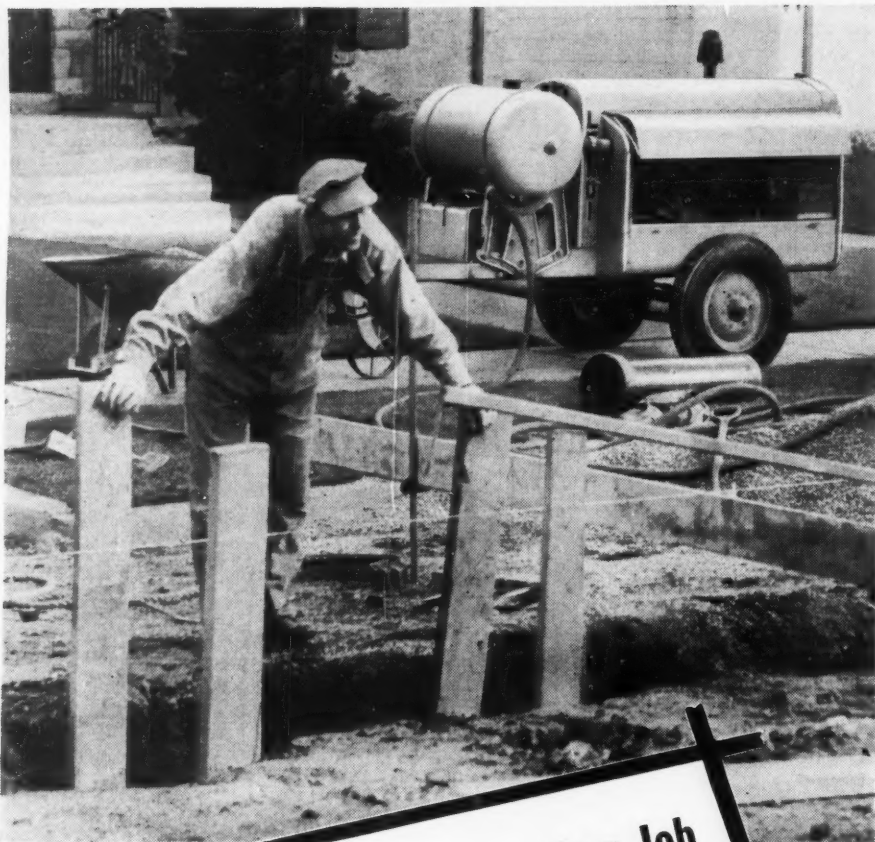
**Answer:** Your Socony-Vacuum Representative is trained to analyze and solve equipment problems. When necessary, he can also draw on our vast engineering staff for expert counsel. Call in this man today.

**Why Be Satisfied Merely With "Gas and Oil" When You Can Get Complete Service!**



**SOCONY-VACUUM**  
  
*Contractors' Lubrication*  
**SERVICE**

**CORRECT LUBRICATION  
FOR EVERY PART  
OF EVERY MACHINE**  
*- Real Help with  
Maintenance Problems!*



**... Looking Over Another Job  
Well Done with an Economical,  
Dependable LE ROI Compressor**

When there's a job of supplying air, Le Roi Compressors always do it well. Le Roi engineers saw to that when they designed into these units the sturdy, balanced crankshaft mounted on large tapered roller bearings; force feed lubrication; effective air cooling; alloy steel connecting rods; heavy-duty, self-adjusting clutch; large tube and fin type intercooler and

a spring-cushioned towing eye for smooth, high-speed towing.

Le Roi compressors are the only ones in which both engine and compressor are built by the same manufacturer — for greater precision and longer life. Sum up all the features, and the answer is more air at lower cost with Le Roi. Available in sizes from 60 to 500 c.f.m. See your nearest Le Roi distributor for further details or write for bulletins.

## Le Roi Company

MILWAUKEE 14, WISCONSIN

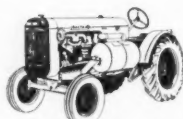
NEW YORK • WASHINGTON • BIRMINGHAM • TULSA • SAN FRANCISCO



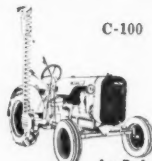
Le Roi  
heavy-duty engine



Le Roi  
Engine-Generator Unit

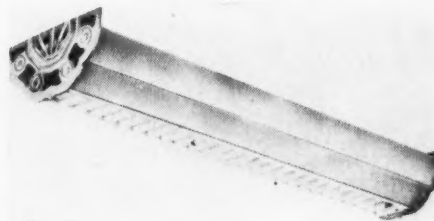


Le Roi  
105 Tractair



Le Roi  
Centaur Mower

**FLUORESCENT FIXTURE** employs two or four 20-watt lamps and four to eight 40-watt lamps in 4 or 8-ft. lengths, with 8-ft. fixture furnished in single-piece body. Adaptable for both ceiling or suspension mounting, it is fabricated on strongly reinforced



steel body equipped with inspection plate that is instantly removable by loosening single wing nut. Method of positioning lamps on reflector points doubles reflector surfaces. Principle of air-draft cooling ventilates fixture body and prolongs ballast life—**Joleco Corp.**, 2517 Baldwin St., St. Louis 6, Mo.

**DAMP - PROOFING COMPOUND**, known as Tricoseal, penetrates and seals pores of dense, hard, smooth masonry, such as stucco, brick or concrete, and moisture-proofs it at the same time. Waterproofs and damp-proofs walls of basements, swimming pools, tanks, vats, reservoirs, pits, cisterns sewage disposal basins, elevator pits, fire walls, copings and cornices as well as exposed surfaces of concrete bridges and buildings, underground passages and tunnels and concrete monolithic sewers. This slow hardening compound in powder form, when mixed with water, can be applied like paint with brush or spray on inside or outside surfaces, above or below ground. Obtainable in cement gray, white, cream, ivory, light green, buff, blue and brick red, with other colors available on special order—**American Fluresit Co., Inc.**, 635 Rockdale Ave., Cincinnati, Ohio.



**VIBRATION DAMPENER BUSHING** for Manhattan portable grinding wheels is said to eliminate vibration and provide better finish, less fatigue to operator, increased production and lower maintenance costs. Wheels with V.D.B. mountings

are made in straight types up to 8-in. dia. for use on electric, pneumatic and flexible shaft portable grinders.—**Raybestos-Manhattan, Inc.**, Passaic, N. J.



# GEARED TO THE EARTH — FOR FASTER LOADING



with **MAXIMUM** Traction and Weight  
on Drive-Wheel Centers

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### EARTHMOVING EQUIPMENT

Includes



#### ★ SCRAPERS

Tractor-driven for handling heaping yardages from 6 to 28 cu. yards.



#### ★ POWER CONTROL UNITS

Single and multiple drum with universal or roller fairleads.



#### ★ BULLDOZERS

Tough and rugged design for standard makes of tractors.



#### ★ TRAILBUILDERS

Adjustable angle-blades for standard tractor mounting.



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Available in light, medium and heavy duty models with two sizes to each model.

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The scraper unit of Wooldridge Terra-Cobra Earthmovers is suspended from a rigid yoke and frame which connects to the engine unit by means of the massive oscillating King Pin. This design concentrates maximum weight of the combined units, fully loaded or empty, directly over drive wheel centers which provides greatest possible traction for positive travel. At no time does this tractive weight shift—even when the bowl is dropped for loading. For fast, low cost earthmoving, gear your operations to Terra-Cobras. Get full details today.

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**TERRA**  **COBRA**

**High-Speed  
Self-Propelled  
EARTHMOVERS**

# ATLAS LABOR-SAVING SPEED FORMS



Caisson Shaft Form 100 Ft. Deep. Note the clear opening thru the forms.

## FORM LABOR ONLY 3.2c PER SQ. FT. ON THIS CAISSON SHAFT FORM

Perfect Concrete Job • Smooth Finish • No Finns

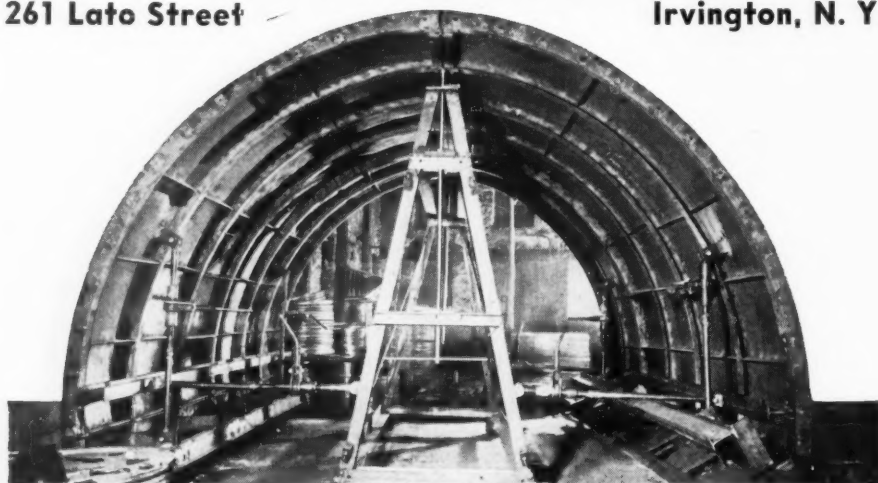
3.2c per sq. ft. includes crane operator, erection and stripping. First the bottom belt channel is erected. Next, two lifts of forms are bolted with special quick-assembly wedge bolts. Then, the top belt channel sets are erected. Stripping is simple and speedy. Continuity and re-use of units effects big savings. The bottom belt channel set is removed. The two lifts of the form panels are removed and the top belt channel set becomes the bottom belt for the next lift.

There is an Atlas Steel Form for your job—Wall, Flat Slab, Pan, Column, Pipe, Tunnel, Bridge, Sewer, etc. Send us an Outline of your next job and let us show you what we can do for you.

## ATLAS STEEL CONSTRUCTION CO.

261 Lato Street

Irvington, N. Y.



Atlas Traveling Form

Atlas Steel Forms for every Purpose

**PNEUMATIC-TIRED WHEEL** is designed for use on contractors' equipment, small autotrailers, wheelbarrows, etc. It is manufactured of new



"air-light" cast aluminum materials. —Northrop Gaines, Inc., subsidiary of Northrop Aircraft, Inc., Northrop Field, Hawthorne, Calif.

**MAGNETIC DRILL EXTRACTOR** is capable of lifting approximately 25 times its own weight in vertical lifts and exhibits unusual holding ability on small and uneven surfaces. Weighs only 1 lb. and is made in 1¼ and 1½-in. diameters. In use, it is fastened to face of old drill rod at end of length of drill rod or wooden pole. Can be easily carried in driller's pocket.—Dings Magnetic Separator Co., Milwaukee, Wis.

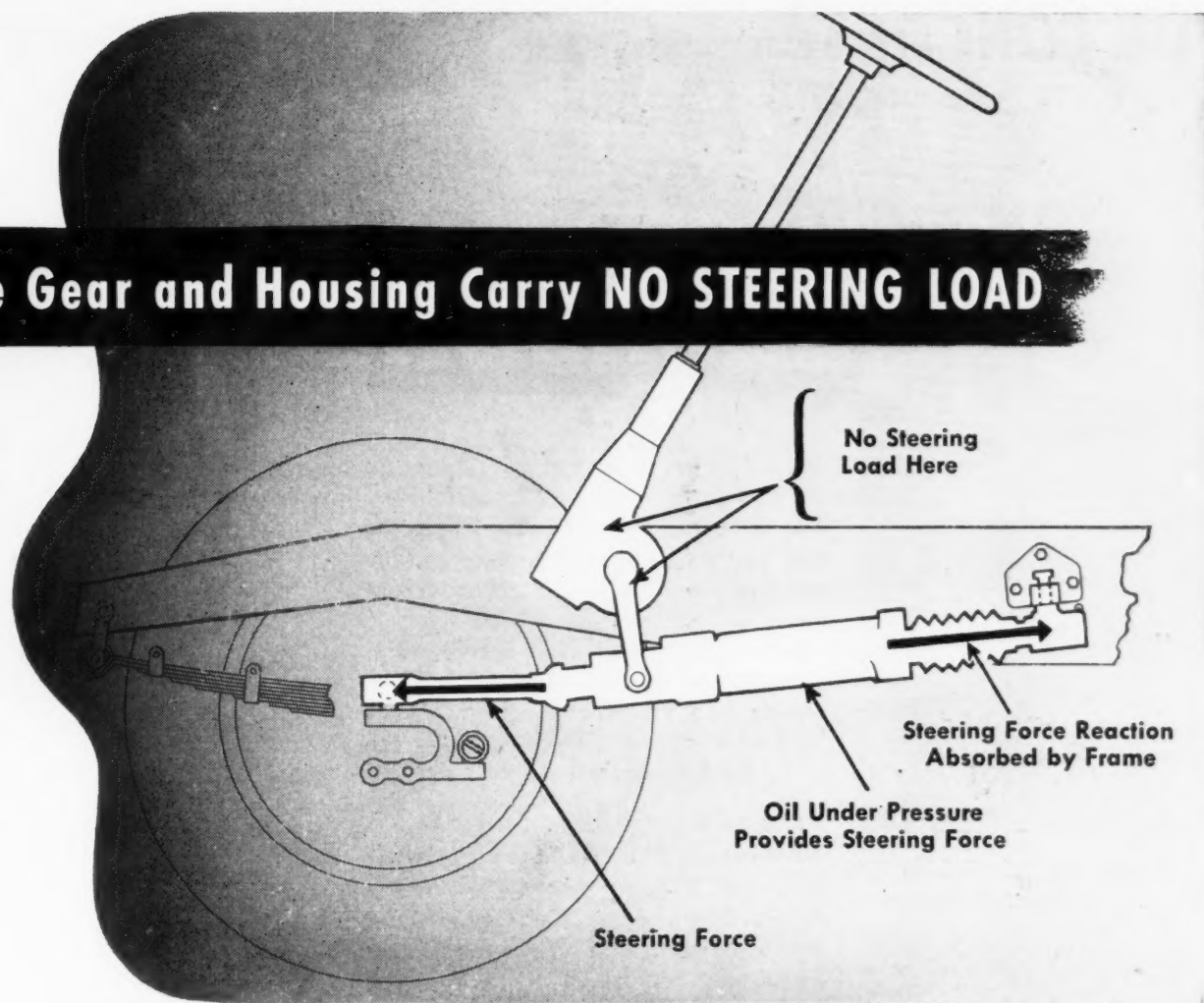
**SPRING-LOADED BRAKE**, held in off-position by air pressure, gives added safety to Model HKK hoist. If air supply fails for any cause, if air hose ruptures or line breaks, brake is automatically applied. It will hold



in suspension any load within capacity of hoist and cannot be released until air is admitted to motor and load is picked up. It is automatically released when throttle valve is moved in either direction. Hoist has rated vertical life of 2,000 lb. at 80 lb. air pressure.—Gardner-Denver Co., Quincy, Ill.



**The Gear and Housing Carry NO STEERING LOAD**



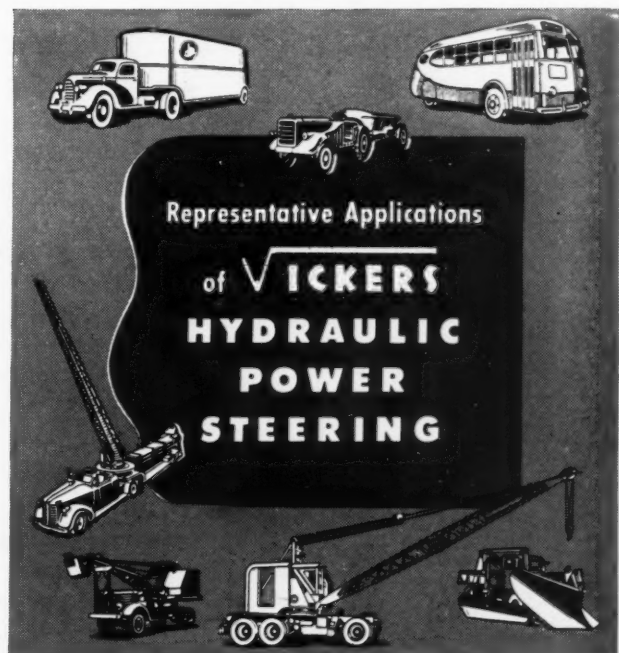
## *With* **VICKERS** **HYDRAULIC POWER STEERING**

Neither steering load nor road shock can reach the steering gear and housing when Vickers Hydraulic Power Steering is used. All the steering load is carried by the hydraulic cylinder, and road shocks are transmitted to the frame. The Vickers booster unit is controlled by the pitman arm and actuates the drag link directly. Direct application of power assures protection against wear or failure in the steering gear proper—makes it possible to use a lighter, more economical gear and housing with complete safety.

There are many other advantages of effortless Vickers Hydraulic Power Steering. Ask for Bulletin 44-30 which contains complete information.

**VICKERS Incorporated**  
1494 OAKMAN BLVD. • DETROIT 32, MICHIGAN

Application Engineering Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT  
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# FOR CONCRETE VIBRATION ON EVERY TYPE OF JOB IT'S

## JACKSON 2 to 1



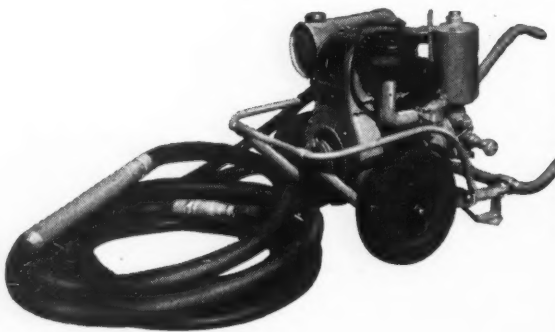
**JACKSON FLEXIBLE SHAFT  
Model FS-7A**

A lightweight, easy-to-handle electric vibrator of wide adaptability. Will handle any of our standard vibrator heads up to 2½" x 18½" with shafts up to 21' long. Universal motor, 115 volt AC or DC. Frequency 7,000 to 10,000 V.P.M. Available with shaft lengths of 24", 36", 7', 14' and 21'. Skid type handle.

You state your concrete vibratory problem, and we'll supply the answer and lay you 2 to 1 that the JACKSON equipment we recommend will not only do the best possible job in the shortest possible time, but will also be the most dependable, trouble-free vibratory equipment you have ever owned. The line covers the entire field of concrete construction.

**General Construction • Light Construction • Mass Concrete • Hard-to-get-at Places • Form Vibrating • Floors, Streets and Highways • Pipe Manufacturing • Movement of Materials • Vibratory Tables, etc.**

Write for complete information and recommendations or the name of the nearest JACKSON distributor where this equipment may be seen.

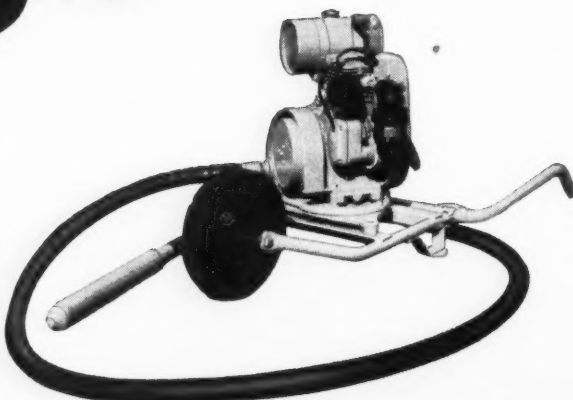


**JACKSON HYDRAULIC  
Model HS-A1**

A husky, dependable concrete vibrator for general use. Oil powered, gas engine hydraulic pump drive. 4000 to 7000 V.P.M. Head — 2¾" x 21". Quickly fitted with head for wet or dry rubbing, drilling, etc. Balanced for easy lift. Drop handles for easy hose disposal.

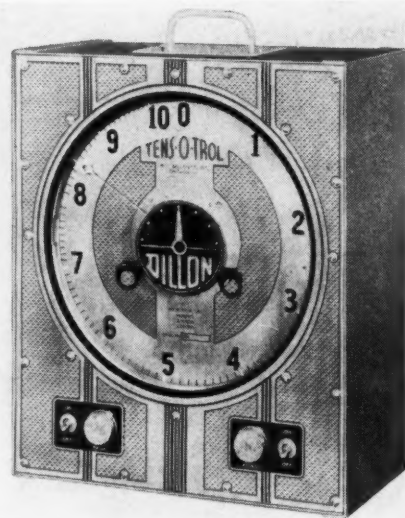
**JACKSON FLEXIBLE SHAFT  
Model FS-6A**

A very dependable independent unit, gas engine powered. Up to 7500 V.P.M. 3 heads for thick and thin sections. Flexible shafting in 7 ft. to 14 ft. lengths up to 28 ft. Automatic clutch. Swivel base. Wheel barrow optional. Available with grinding and other attachments.



**ELECTRIC TAMPER & EQUIPMENT CO.**  
LUDINGTON MICHIGAN

**ELECTRIC REMOTE TENSION AND WEIGHT INDICATOR** permits crane boom operator on ground to read exact weight as load is lifted, thus preventing overloading. Tens-O-Trol repeater station measures 12x14x5 in., with illuminated 9½-in. brass dial



and etched numerals 1 in. high. Master indicating motor, mounted to dynamometer beam, unbalances at slightest amount of tension or weight. This electrical excitation is transmitted by cable to repeater stations where field of receiving motor is correspondingly unbalanced with accuracy of not less than 1½ percent.—**W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44, Ill.**

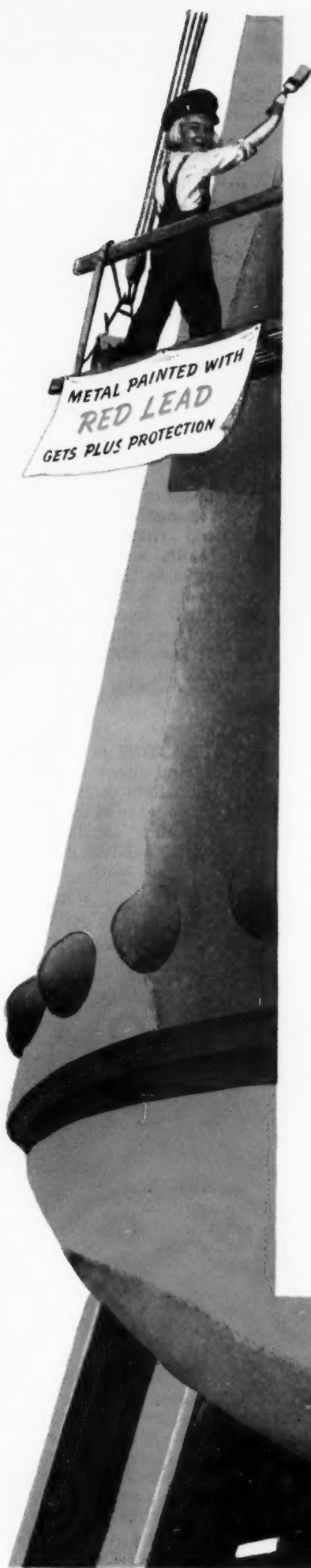
**LIQUID CONCRETE REMOVER** cleans incusted cement and concrete from tools, equipment and forms. Also dissolves rust and prevents further corrosion. It is clear, yellowish, practically odorless liquid, non-inflammable and harmless to metal and wood. It is necessary only to immerse incusted part in solution, which can be used over and over again, for 3 to 8 hr.—**Nox-Rust Chemical Corp., Chicago 8, Ill.**

**SPIRAL CUT SAW BLADE** for hand-coping or power-operated-jig saw cuts "in any direction without requiring operator to turn saw frame or work.



Since "Allways" blade is circular in section, normal stock removal in one stationary stroke leaves perfect circle. Made of oil-tempered spring steel and designed to cut all woods, light metals and plastics.—**Tyler Mfg. Co., 938 Pico Blvd., Santa Monica, Calif.**





# Name the DRYING SPEED... *Red Lead can meet it*

Through the years, Red Lead's effectiveness in fighting rust has won it general acceptance by industry as the standard for metal protection.

Perhaps less generally known, however, is that Red Lead's *extra* protection is available in an extensive range of paint formulations to give you the drying speed you need.

This wide choice is due to Red Lead's compatibility with the many types of paint vehicles in use today. It can be combined with the new synthetic resins, modified synthetics, natural resins, drying oils and other vehicles.

So, whether painting schedules demand quick drying, or whether normal drying time is permitted, remember, you can take full advantage of the plus protection that has made Red Lead famous.

#### Why RED LEAD Means Extra Rust Protection

Red Lead has the property of counteracting acid conditions, recognized as accelerators of rust. In the presence of various acids, Red Lead forms insoluble lead salts at the approximate rate at which the acids are supplied.

This is true whether the acid originates from acid-forming environments, such as gas, smoke and moisture in the atmosphere, or from the decomposition of the vehicle. Thus, a rust-inhibiting condition is maintained with a Red Lead paint.

Red Lead also forms an adherent protective shield

which prevents electro-chemical action, another prime cause of rusting.

#### Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a metal paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint.

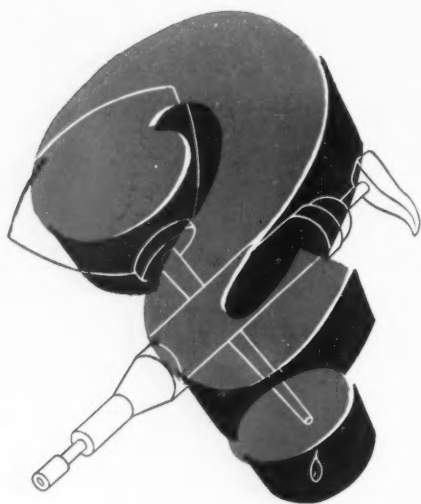
No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet—"Red Lead in Corrosion Resistant Paints" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas—ranging from Red Lead-Linseed Oil paints to Red Lead-Mixed Pigment-Varnish types. If you haven't received your copy, address nearest branch listed below.

**NATIONAL LEAD COMPANY:** New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division.)



**Dutch Boy**  
Reg. U.S. Pat. Off.  
**Red Lead**



## GREASE OR OIL

The question of selection of the proper type and consistency of lubricants need offer no problem. LUBRIPLATE Lubricants are available from the lightest fluids to the heaviest grease types. All reduce friction and wear, protect against rust and corrosion, and are more economical than conventional lubricants. Let us prove our case.

### R<sub>x</sub> FOR YOUR MACHINERY

- No. 3 — Ideal for general oil type lubrication, ring oiled bearings, wick feeds, sight feeds and bottle oilers.
- No. 8 — Because of high film strength and long life it reflects outstanding performance in most types of enclosed gears (speed reducers).
- No. 107 — One of the most popular grease type products for general application by pressure gun or cups.
- No. 70 — For a wide range of grease applications, especially at temperatures above 200 degrees F.
- No. 130-AA — Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.
- BALL BEARING — This is the LUBRIPLATE Lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.



# LUBRIPLATE

FISKE BROTHERS REFINING CO.  
NEWARK 5, N. J. TOLEDO 3, OHIO

DEALERS FROM COAST TO COAST  
CONSULT YOUR CLASSIFIED TELEPHONE BOOK

(Advertisement)

## FIT THE LUBRICANT TO THE JOB

The operation of all types of machinery is dependent upon lubrication and to assure satisfactory operation, bearings, gears, cams, chains and other moving parts must be lubricated with a lubricant that "fits the job."

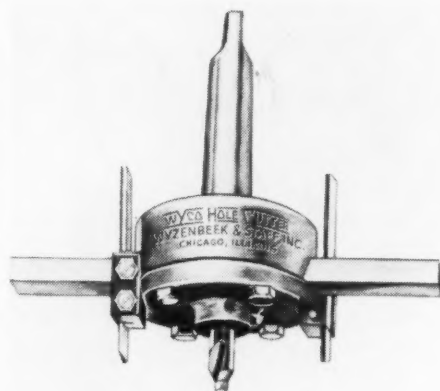
Equipment Manufacturers increasingly realized the extreme importance of proper lubrication, so most often included the appropriate lubrication system in their construction design. When no special lubricating devices are incorporated in the machine design, manufacturers will generally specify, with accompanying literature or tags, just how and with what type product the lubrication is to be performed. There remains for the equipment user however, to consider his own individual operating conditions as a basis for selecting the proper type oil or grease that will have all the necessary properties required for assuring satisfactory lubrication.

In choosing an oil, operating Speeds and Temperatures are the most determinant factors. High speeds require light bodied oils; high temperatures require a heavy oil that will retain its film strength and will not be dissipated to a watery consistency in the presence of considerable heat, and shall possess high flash and fire points. Likewise the choice of grease will depend on Operating Speeds, Temperatures, Loads, and the possible presence of water, acid, or dust conditions. High Speeds require a light to fluid grease; high temperatures require a medium to heavy grease. For heavy loads, medium to heavy greases, and preferably enhanced by an extreme pressure additive, are most suitable. However, today's trend is leaning toward multi-purpose lubricants.

LUBRIPLATE lubricants were developed to "fit the job." Whether grease or oil is required there is a LUBRIPLATE product to meet every lubrication demand. LUBRIPLATE arrests progressive wear and protects against rust and corrosion. Because LUBRIPLATE is endowed with special qualities not found in ordinary lubricants, it is well able to meet the modern demands of higher speeds, heavier loads, and extremes of heat and cold, to the utmost satisfaction of its many users.

A copy of "THE LUBRIPLATE SERVICE HANDBOOK" containing valuable information on the subject of lubrication will be furnished without charge by writing Fiske Brothers Refining Company, Newark 5, N. J.

**HOLE AND WASHER CUTTER** cuts steel plate or other material up to 1/2-in. thickness. Fits 1-in. drill chuck or can be supplied with Morse taper shank. Tool holders and body are of



heavy steel and are extremely rigid. Balanced cut is insured by two standard high-speed cutting off blades. Pilot pin is 1/2-in. hardened. Shanks are interchangeable. Furnished complete with 7/8-in. hexagon shank to fit any 1-in. drill chuck or with No. 3 or 4 Morse taper shanks.—Wyzenbeek & Staff, Inc., 838 W. Hubbard St., Chicago 22, Ill.

**GLASS INSULATION** is said to increase life of equipment motors and generators. Main field coils in generator of this crane were rewound with Fiberglas and mica insulation and 100-hp. motor which drives generators was also rewound with Fiberglas.



Changeover to this method of insulation is credited by cement manufacturing company with increasing output of 85-hp. drive motor which powers smaller crane. Fiberglas was also used to replace organic insulation on 40-hp slurry pump motor, with consequent elimination of failures.—Pittsburgh Corning Corp., Grant Building, Pittsburgh, Pa.

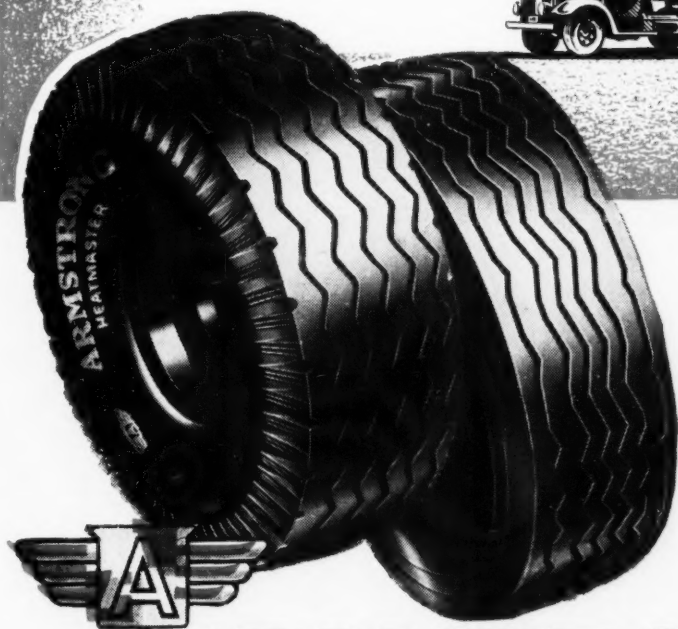
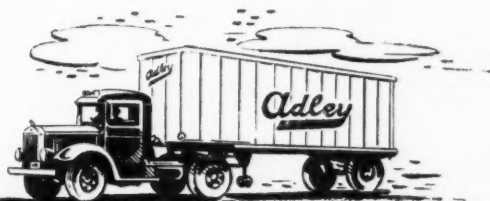


**"mileage means  
money  
to us!"**

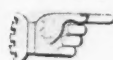


M. L. ADLEY, Treas.  
Adley Express Co.  
New Haven, Conn.

- "Our East Coast operation of 400 highway carriers traveling over 500,000 miles per month and hauling some 12 million pounds per week, requires careful estimating and cost accounting. For the past 25 years our records proved Armstrong Tires are economical and dependable. I am now looking forward to an even better Armstrong Tire to aid us in reducing operating costs . . . mileage means money to us."



SINCE 1912 hundreds of commercial car operators have learned that *you can't buy a better tire than an Armstrong!* For years, we have pioneered in making tires that wear longer and cost less. You can count on an Armstrong to give you a tire that will perform better, last longer, stand up under all conditions and cost you less per mile of use! That's not a statement—it's a promise, a promise backed by the thirty-year integrity of the manufacturer.



For literature or information write your Armstrong distributor or to Armstrong Rubber Company.

**ARMSTRONG TIRES**

Manufacturers of Quality Tires and Tubes Since 1912 • General Offices and Plant—460 Elm Street, West Haven 16, Conn.



# ***There's more of everything you want and need for maximum Trenching Performance***

- SPEED . . . MOBILITY . . . MANEUVERABILITY
- POWER . . . STRENGTH . . . DURABILITY
- EASE OF HANDLING AND OPERATION
- MINIMUM MAINTENANCE AND  
OPERATING COST

**CLEVELANDS Save More . . . Because They Do More**

**THE CLEVELAND TRENCHER CO.**  
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



**WISE** forms loop in wire rope by turning one hex nut with ordinary wrench. Cabl-Vise automatically compensates for rope sizes within designed range and holds loop firmly through splicing or clamping operations. It is equipped with swivel base

that accommodates vise in either vertical or horizontal position and rotates through 360 deg., clamping firmly in any desired direction.—Nunn Mfg. Co., Evanston, Ill.

**CAST-IRON WELDING** is simplified by Ni-Rod electrode which lays high-strength machinable deposit with reduced need for troublesome special treatment of casting before and after welding. Arc is said to be stable in all positions. Deposit washes evenly up against sides of joint. Doesn't undercut or leave narrow grooves to trap flakes of slag that would weaken weld as subsequent passes are made.—The International Nickel Co., Inc., Bayonne, N. J.

## **RAPID!**



**Junior Model with Horizontal Frame Attachment.**

Will break 15 inch reinforced concrete walls up to 10 feet high. Frame attachment can be removed and boom tipped up to vertical position for breaking all types of pavement.

**Ask about our  
HEAVY-DUTY TYPE**

**RAPID PAVEMENT BREAKER  
COMPANY**

1517 Santa Fe Ave. Los Angeles 21, Calif.



# BETHLEHEM HOLLOW DRILL STEEL

THE OLD RELIABLE

IT'S STILL

Years ago, on some job or other, Bethlehem Hollow was dubbed the "old reliable" drill steel.

That term has been used so much, in connection with Bethlehem Hollow, that it no longer has any originality.

Nevertheless, it's just as appropriate today as it was many years ago.

For Bethlehem Hollow is a truly reliable drill steel. Your blacksmith knows that it's uniform; makes up easily; gives him no trouble in the heat-treating stage. It can be safely hardened over a broad quenching range, and it is tough and fatigue-resistant.

It is as good for threaded rods as it is for forged-on bits. The hole is always smooth, round, and well centered—a feature that both your blacksmith and your drill runners like.

These points mean dependability. When you purchase Bethlehem Hollow, you are getting true dependability—and paying nothing extra.

WE BEEN USIN' BETHLEHEM HOLLOW  
SINCE I FIRST CAME WITH THE OUTFIT  
—AND THAT'S A LOT OF YEARS.

BETHLEHEM PACIFIC COAST STEEL CORPORATION  
General Offices: San Francisco

District Offices: Los Angeles, Portland, Seattle, Salt Lake City, Honolulu.  
Steel Plants: South San Francisco, Los Angeles, Seattle.

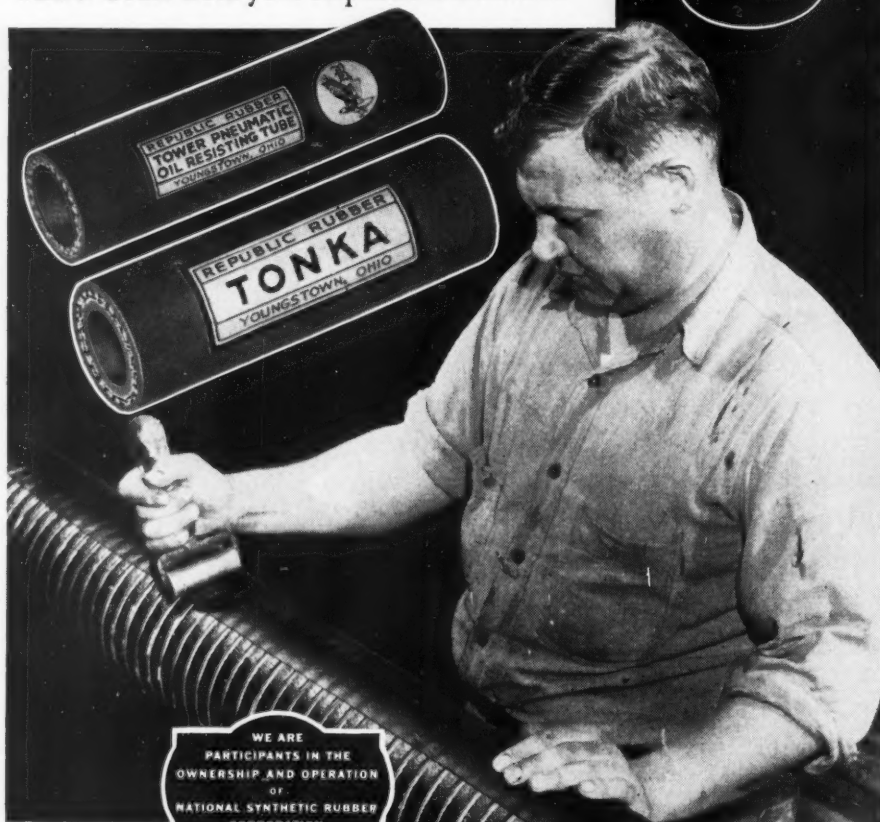
## BETHLEHEM PACIFIC

SURE — WHEN IT'S A GOOD HORSE,  
YOU GIVE HIM A LONG RIDE.



## REPUBLIC RUBBER HOSE BUILT FOR *Tough Work* AND A *Tough Life*

HOSE has to be a tough combination of first-grade rubber compounds and strong fabric or wire reinforcements to take life on a construction job. Whether it's built to handle heavy suction and gritty or corrosive fluids, air, water or steam under pressure, there are countless other conditions that represent threats to maximum service of the hose. Full allowance is made for such extraneous abuse—rough handling, crushing, dragging over sharp objects, exposure to deteriorating elements—in the design and construction of Republic Rubber Hose. This is a primary reason why these rugged mechanical rubber products are found on so many projects, everywhere. Order from your Republic Distributor.



# REPUBLIC RUBBER

DIVISION

LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS  
YOUNGSTOWN O



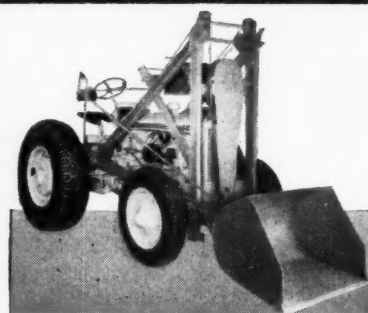
LEE DELUXE TIRES AND TUBES  
CONSHOHOCKEN, PA



**BUCKET PUMP GREASE GUN** is of all steel construction and holds 30 lb. of lubricant. Porto-Pak features positive automatic venting device in pump tube assembly which operates instantly when pump handle is raised momentarily to topmost position.

This relieves pressure in hose assembly, permitting lubricant to drain back into container.—Lincoln Engineering Co., St. Louis 20, Mo.

**ROOFING MAT** of Fiberglas can be used as carrying and reinforcing agent for bitumen in roofing applications. Composed of jackstraw arrangement of glass fibers bonded into uniform felted sheet, it is available in two forms, one with lines approximately 3/16 in. wide ruled parallel to running length and the other without lines for use as edging mat. Both forms have nominal thickness of .015 in. and weigh .0101 lb. per square foot. Minimum breaking strength is 10 to 14 lb. per inch width. Minimum length per roll is 288 ft.—Owens-Corning Fiberglas Corp., Toledo, Ohio



## FRONT END LOADERS

for Industrial Tractors  
Extensible Booms—8' Lift  
1/2 and 5/8 cu. yd. Capacity

Other Products

**CONCRETE VIBRATORS**

Gasoline Engine and  
Electric Motor Driven Models

**HEATING KETTLES**

for Asphalt and Tar

**AGGREGATE DRYERS**

for Stone and Sand

**ASPHALT PLANTS**

Portable — Stationary

WRITE FOR CIRCULARS

White Mfg. Co.

ELKHART

INDIANA





Mobile rock-crushing plant, easily moved from one location to another, powered by MURPHY DIESEL Model ME-66, 6 x 6 1/2", 6-cyl., full Diesel engine.

## Powered by Murphy Diesel.. *It is Dependable!*

WHETHER it's a rock crushing plant or one of many other types of construction equipment, if it's powered by MURPHY DIESEL, it has DEPENDABLE, low-cost power. More and more manufacturers and users of heavy-duty equipment are accepting this fact because MURPHY DIESEL DEPENDABILITY continues to be proved in performance . . . not only on rock crushers, but also at sand and gravel plants, on excavating and loading machines, hoists, pumps, locomotives, logging, lumbering and mining

equipment, work boats . . . for heavy electrical loads, too . . . and for many other heavy-duty applications.

These rugged, reliable engines are compact, relatively light in weight, strong in reserve power. Simple in construction, simple to operate, easy to start in any weather, their operating and maintenance costs are low. On new or re-built equipment, specify MURPHY DIESEL . . . it's DEPENDABLE POWER! Write for bulletin.

**FIELD-PROVEN** *Power..*

**MURPHY DIESEL COMPANY**

*Engines from 90 to 215 H.P. Generator Sets from 60 to 115 K.W.*

5339 W. BURNHAM STREET • • • • • MILWAUKEE 14, WISCONSIN



119

# FORD TRUCKS LAST LONGER!



**More Ford Trucks in Use  
Today Than Any Other Make!**



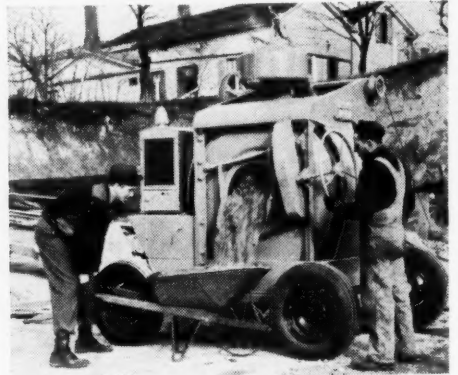
*The Leader*  
**IN WELDED CONSTRUCTION**  
**WELLMAN**  
*Williams Type* **BUCKETS**

Wellman pioneered in the welded construction of rolled steel buckets. Priceless experience, superior engineering and the finest type of construction guarantee you more satisfaction from your Wellman-built buckets.

**SEND FOR BULLETIN**

**THE WELLMAN ENGINEERING COMPANY**  
7017 CENTRAL AVENUE • CLEVELAND, OHIO

**CONCRETE MIXER**, known as Kwik-Mix 11-S Dandie, utilizes high-strength steel at every point of strain. Because of its tilted flow-line discharge chute, it is completely discharged in two revolutions of drum or in 7 sec. Charging time is cut and shaking strains reduced with new selective skip shaker which shakes



only after skip is partly empty. Four-wheel model is available for side or end discharge. Remixing action folds as it mixes and completely coats aggregate. Heavy-duty all-welded frame resists twisting. Automatic water tank holds 18 gal. Optional equipment includes charging chute with platform, batchmeter, self-priming centrifugal pump, extension track charging skip, skids, batch hopper, auxiliary water tank, swivel chute, hoist and electric motor. —Koehring Co., 3026 W. Concordia Ave., Milwaukee 10, Wis.

**SCRAPER-LOADER**, adaptable to any standard dump truck, can be operated by two men. Boom, pivoted at base, swings out over ditch; 1/6-cu. yd. scraper is pulled along ditch



of cable attached to drawbar which projects out from truck below boom. Drawbar is hinged to drop down out of way when not in use. Hoisting device is winding drum attached to rear wheel of truck which supplies power for raising scraper and swing-  
(Continued on page 150)

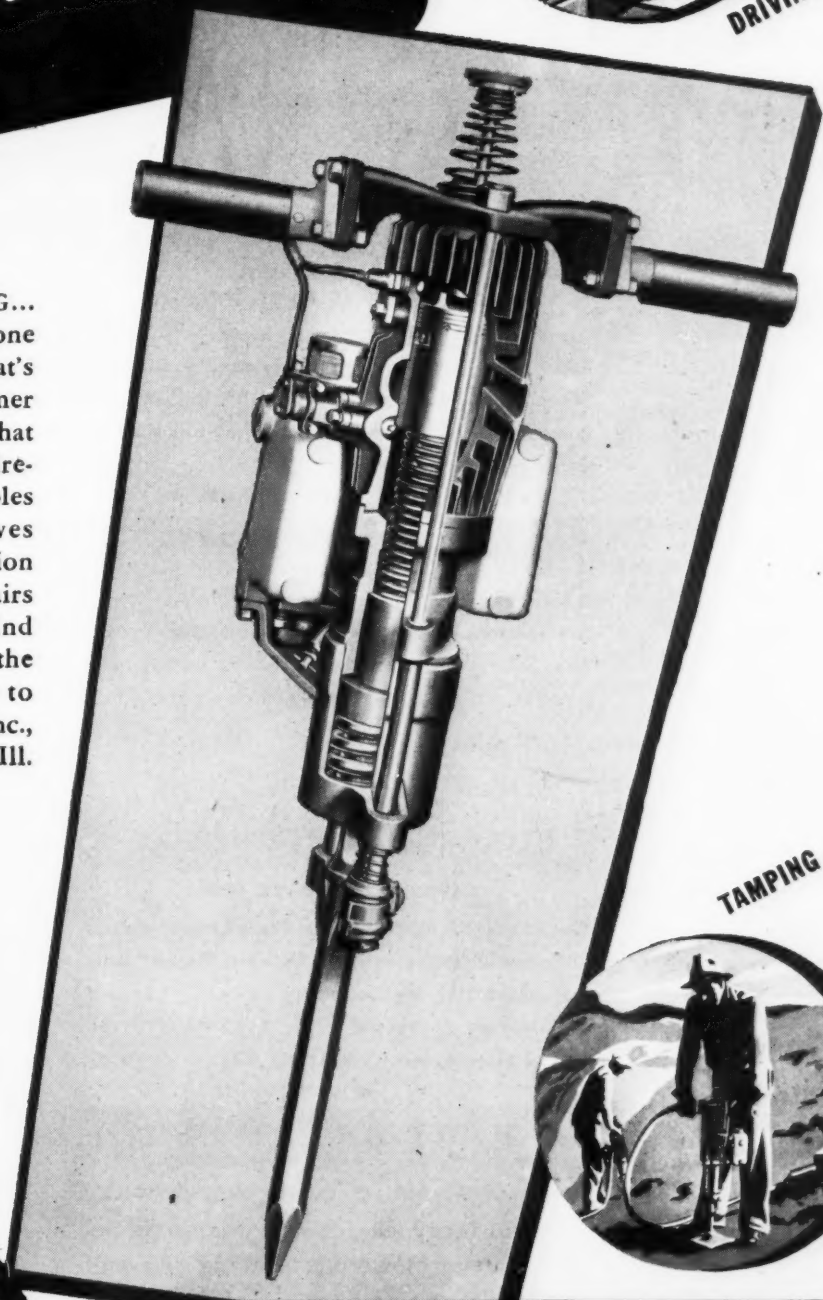


**BUSY EVERYWHERE  
AND GETTING BUSIER**

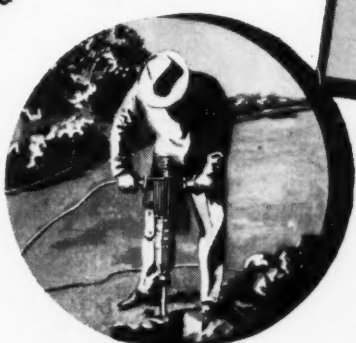


**DRIVING**

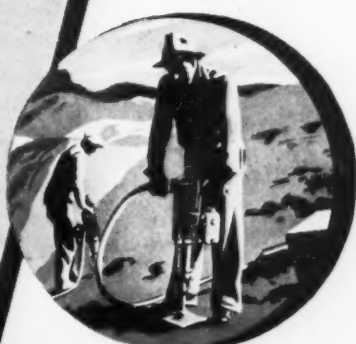
**BREAKING...DRILLING...DRIVING...  
TAMPING...**doing a hundred and one  
different jobs all over the nation! That's  
the Barco Portable Gasoline Hammer  
—the profitable, efficient slugger that  
works faster, better. Strong and tire-  
less, yet light in weight, Barco enables  
workers to do better work, saves  
money, saves time. On construction  
and expansion programs, on repairs  
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more and more Barcos busy on the  
job. For complete details write to  
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1812 Winnemac Ave., Chicago 40, Ill.



**DRILLING**



**BREAKING**

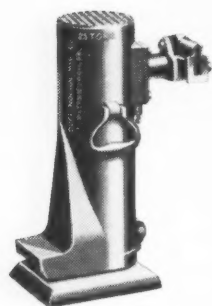


**TAMPING**

**BARCO**  
**Portable Gasoline**  
**HAMMERS**

# DUFF-NORTON JACKS

and TRENCH BRACES



## HEAVY DUTY SCREW JACKS

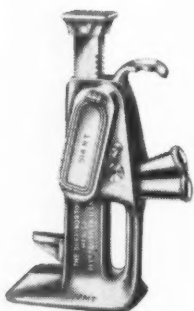
CAPACITIES: 15 TO 50 TONS

Also available in higher capacity types, these rugged, dependable jacks are particularly suitable for rough outdoor use. Equipped with foot-lift for low loads, convenient carrying handles. The 50-ton sizes are designed with large heads.



## STEEL TRENCH BRACES

Ideal for trench bracing work, Duff-Norton Trench Braces speed up shoring work and prevent cave-ins. Available as complete units, as illustrated, or as separate fittings, and for attachment to timbers.



## AUTOMATIC LOWERING JACKS

CAPACITIES: 5 TO 25 TONS

For all general lifting service, these general purpose jacks are equipped with the Genuine Barrett Automatic Lowering Mechanism.

Handy for all types of work, they are strong, easy to operate, equipped with foot-lift for low loads.



## A JACK FOR EVERY JOB

There is a safe, efficient, easy-operating Duff-Norton Jack for every construction job of lifting, lowering, pushing and pulling. Be sure you have a stock of Duff-Norton Jacks on hand. Catalog on request.

**THE DUFF-NORTON MANUFACTURING CO.**

PITTSBURGH, PA.

Canadian Plant:  
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There is A  
Distributor Near You



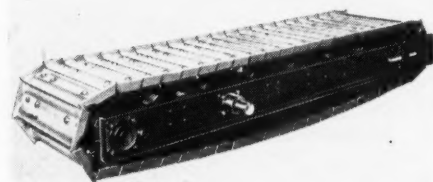
STRONG—

TOUGH—

DURABLE—

(Continued from page 148)  
ing it over truck body. After scraper is filled, truck stops and backs up. Ratchet in winding drum engages and drum winds in line, quickly hoisting loaded scraper up and over truck. By means of trip-line, scraper operator guides bucket to desired unloading position and then trips load. —Cascade Mfg. Co., 2439 N.W. 29th Ave., Portland 10, Ore.

CONVEYOR UNIT is widely used under bins and hoppers for heavy lump material such as ore and pit-run gravel and rock. Heavy-duty roller-supported apron feeder is fur-



nished in several widths and with centers ranging from minimum of 4 ft. 7 in. to maximum of 9 ft. 1 in. varied by 18-in. increments. At normal speed of 10 ft. per minute, capacities will run up to 80 tons per hour. —Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis.

## Shunk Superior Quality BLADES AND CUTTING EDGES

For any make of machine  
Motor Graders, Main-  
tainers, Scrapers, Drags,  
Bulldozers, Backfillers,  
Wagon Scrapers, Trail  
Builders, Trail Blasters,  
Carryalls, Also—

CUTTING EDGES  
WEARING BOOTS  
BACK SLOPERS  
EXTENSION BLADES  
MOLDBOARDS  
and  
SCARIFIER TEETH

50 years of manufactur-  
ing blades has developed  
for you a special steel,  
milled through our own  
rolls and forged at the  
edges to give that extra  
wearing quality you need.

All widths lengths, and  
thicknesses. punched  
ready to fit your machine.

Consult your internation-  
ally recognized Blade Spe-  
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bulletins, giving type and  
name of machines you  
operate—get set for Blades  
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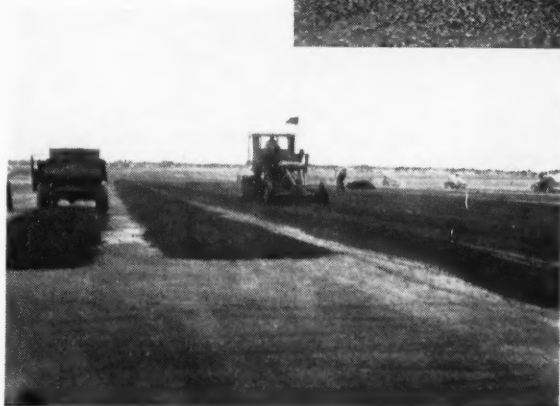
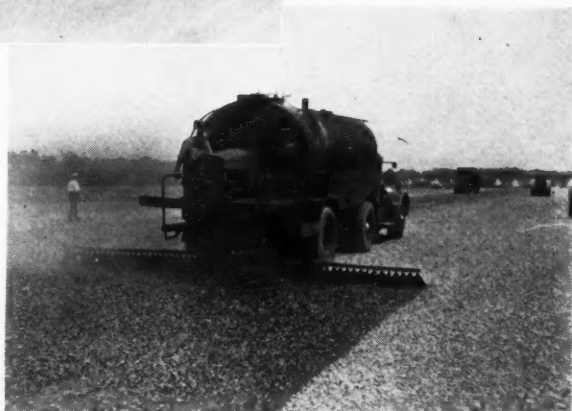
# Why pave airport runways with Asphalt?

FOR THESE REASONS



Runways of this Florida airport were paved with Texaco Asphaltic Concrete of the hot-mix, hot-laid type.

Texaco Asphalt Macadam (penetration type) was used in paving runways of this Connecticut airport.



Colorado airport, whose runways were surfaced with low-cost Texaco Asphalt construction.

*Asphalt runways range from heavy-duty to light, low-cost types. Whether you are building an air terminal for transcontinental commercial planes or a small local flying field, there is a type of Asphalt construction exactly suited to your runway requirements.*

*Asphalt runways are resilient. Consequently, they absorb the impact of landing planes, a characteristic which tends to reduce wear and tear on both the runway and the planes using it.*

*Asphalt runways permit stage construction. Starting out with a low-cost type of Asphalt construction, additional Asphalt courses may be superimposed on the original surface later, to meet the demands of increasing traffic.*

*Asphalt runways are skid-resistant, waterproof, easily and quickly repaired.*

*Texaco engineers, who are Asphalt specialists, will be glad to help you select the type of Asphalt runway construction best suited to your airport's needs.*

*Write our nearest office.*

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19



# TEXACO ASPHALT

# Get More MILES PER HOUR LINES PER GALLON

Speed up your street striping job the easy M-B way. You can get up to 15,000 feet of double line striping per hour per man plus a greater saving in material used with the M-B Self-Propelled Model. This sturdy, easy-to-handle unit sprays just the amount of paint needed and no more for clean, well-defined lines. It cuts costs and steps up efficiency. Write for prices and delivery information today.

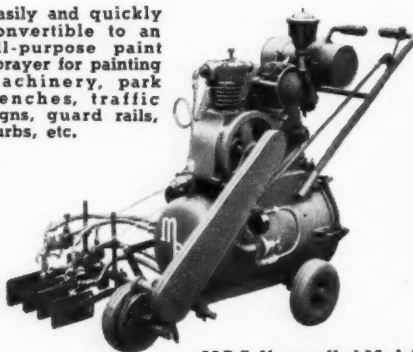


**MEILI-BLUMBERG  
CORPORATION**  
Box CM-7  
New Holstein, Wis., U.S.A.

## MARKERS

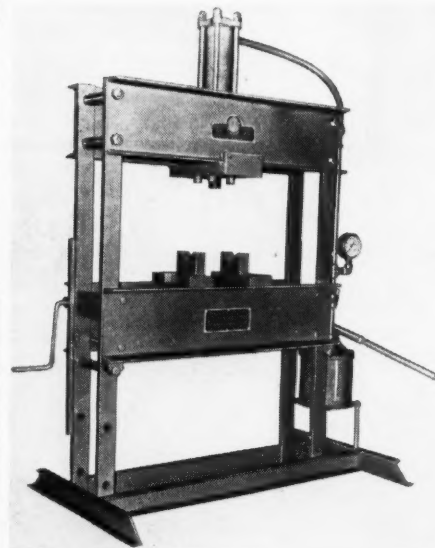


Easily and quickly convertible to an all-purpose paint sprayer for painting machinery, park benches, traffic signs, guard rails, curbs, etc.



M-B Self-propelled Model

**SHOP PRESS** of 60-ton capacity features fast operation, ruggedness, versatility, and large capacity for work size. Power is supplied by two-speed hydraulic hand pump which, in high speed, moves ram  $2\frac{1}{2}$  in. per pump stroke, giving up to 2,000-lb. pressure in fast travel. Hydraulic cylinder rests on rollers which ride flanges of upper bolster and may be moved across entire working width of press.



Ram travel is full 13 in. at continuous stroke. Flexibility is achieved through adjusting lower bolster by means of hand crank. Maximum opening between bolsters is 38 in., minimum is 8 in. Special model with opening range from 8- to 48-in. is available. Machined and matched pair of V-blocks is furnished as standard equipment. Special attachments for ring gear riveting and for aligning and centering shafts, rods, etc., are available, as well as end support stand for handling long material. Overall height is  $88\frac{3}{4}$  in. and net weight is 1,125 lb.—**Rodgers Hydraulic, Inc., St. Louis Park, Minneapolis, Minn.**



## MATERIAL HANDLING

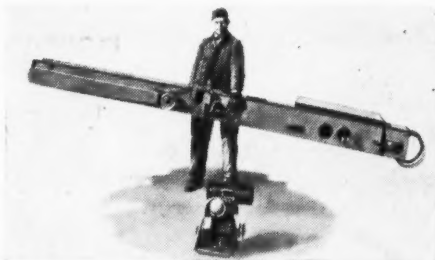
Material handling is a dirty job for both men and machines . . . but it isn't too dirty or too tough for Wisconsin Heavy-Duty Air-Cooled Engines. This Jeffrey Model 209B Portable Scraper Conveyor, powered by a Wisconsin 4-cylinder air-cooled engine, is made by Jeffrey Mfg. Co., Columbus, Ohio.

If your equipment requires rugged, dependable power within a range of 1 to 30 hp., you can't do better than to specify "Wisconsin".

**WISCONSIN MOTOR Corporation**  
MILWAUKEE 14, WISCONSIN

World's Largest Builders of Heavy Duty Air-Cooled Engines

**LIGHTWEIGHT PORTABLE CONVEYOR** called Tote-All Zephyr, is 12 ft. long and weighs 135 lb. without motor. Also available in 16-ft. length.



Made of special alloy steel, it is corrosion and abrasion resistant. Has 8-in. belt. Power is furnished by gasoline engine mounted above conveyor and electric motor is also available. —**Material Movement Industries, Chicago, Ill.**

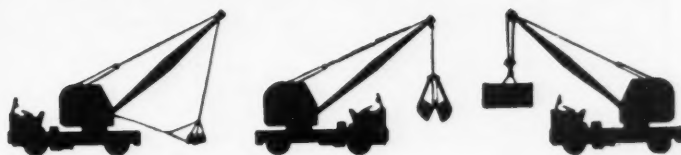


*On the small jobs too*

**YOU CAN MAKE MORE MONEY**

*with* **MICHIGAN**

**MOBILE SHOVEL-CRANES!**



MODEL T-6-K  
3/8 YD. SHOVEL  
6 TON CRANE

3/8 YD. and 1/2 YD. SHOVELS

• 6 to 12 TON CRANES •

• FULLY CONVERTIBLE •

• AIR-CONTROLLED CLUTCHES •

• ONE-MAN OPERATION •

**T**HERE'S real money for you in those smaller jobs! Especially when you take advantage of the truck mobility, operating speed and versatility of the famous MICHIGAN Mobile SHOVEL-CRANES. They consume little time traveling from job to job — in fact, they get there almost as soon as an ordinary truck. On the job, their Fingertip Air Controlled Clutches enable operators to finish the work in a hurry. And when change of attachments is necessary, conversion can be made with a minimum of effort, in a couple of hours . . .

It will pay you to find out about the advantages of MICHIGAN Mobile SHOVEL-CRANES and how they can boost your income by keeping profitably busy all the time — on small jobs as well as large! Write today for complete information on these money-making shovel-cranes — ask for Bulletin CM-76.

**MICHIGAN**

**POWER SHOVEL COMPANY**

**BENTON HARBOR MICHIGAN**

WHERE **BETTER DESIGN**  
and  
**PRECISION CONSTRUCTION**

MEAN  
**BETTER HEAD PROTECTION!**

**M.S.A. Skullgard**

Providing easy wearing comfort and solid head protection on construction projects everywhere, M.S.A. Skullgard is distinguished by many exclusive design and construction features, including: the use of *high-pressure molded laminated bakelite*, with tremendous resistance to fracture and a high dielectric strength; *deep-curved crown*, providing extra clearance between hat and top of head, *uniform thickness* throughout crown and brim of hat; *light weight!*

With flexible sweatband, shock-absorbing inner cradle, and air spaces between sweatband and shell of hat, Skullgard is cool and comfortable to wear. It is tough and durable, completely unaffected by contact with water, grease, perspiration and common chemicals. Write for the Skullgard facts in Bulletin DK-11.



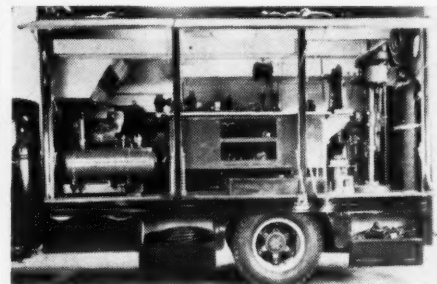
**MINE SAFETY APPLIANCES COMPANY**

BRADDOCK, THOMAS AND MEADE STREETS

PITTSBURGH 8, PENNA.

District Representatives in Principal Cities

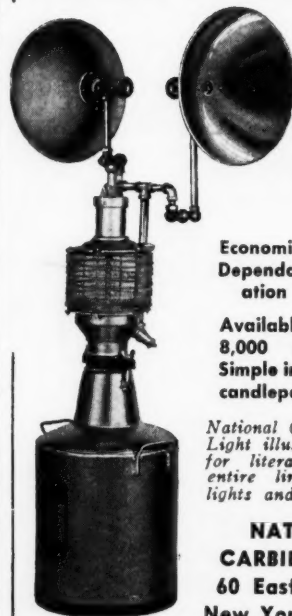
**MOBILE MACHINE SHOP**, mounted on standard truck, includes all equipment ordinarily assembled in central repair depot. Basic power



units are 60 cfm. Davey compressor, 300-amp. welding generator, and 5-kw. power generator. Almost unlimited number of equipment combinations can be included.—Davey Compressor Co., Kent, Ohio

**COLD-APPLIED COATING**, called Bituplastic, protects concrete, masonry and metal structures from corrosion and deterioration. It is black, irreversible dispersion which, when dry, forms tenacious waterproof film that does not revert to original state. Contains no volatile solvents and is practically incombustible, as well as odorless and tasteless. Usual application is at rate of 75 to 100 sq. ft. per gallon per coat.—Wailes Dove-Hermiston Corp., Westfield, N. J.

## National Carbide FLOODLIGHTS



FOR ALL  
PURPOSES  
FOR WHICH  
FLOOD-  
LIGHTS ARE  
REQUIRED

Economical in Cost  
Dependable in Operation

Available in 1500,  
8,000 and 16,000  
Simple in Construction  
candlepower units.

National Carbide N-200  
Light illustrated. Write  
for literature showing  
entire line of Flood-  
lights and Lanterns

**NATIONAL  
CARBIDE CORP.**  
60 East 42nd St.  
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# BUILT FOR *Your* BUSINESS

Whatever your hauling requirements, GMC's wide range of models from ½ to 20 tons offers you the exact kind of trucks you need to do your job. Postwar GMCs for construction, mining, quarrying, road building and other heavy duty operations are the best GMCs ever built for these uses. Gasoline models have engines of the same basic design as the famous "270" which powered nearly 600,000 GMC-built Army trucks. Diesel models are smoother and more powerful than ever. Both types have greatly improved chassis . . . with heavier frames and axles, sturdier clutches and transmissions and bigger brakes. GMCs are all-truck built to deliver peak power, performance and economy on the toughest jobs. . . . They're built for your business.



**GMC**  
**TRUCKS**

*The Truck of Value*

GASOLINE • DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS

*puts the weight...*  
**where it's needed!**



**3-AXLE TANDEMS**

9 to 17 tons

•

**TANDEM ROLLERS**

3 to 14 tons

•

**3-WHEEL ROLLERS**

6 to 12 tons

•

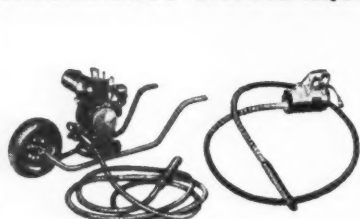
**TRENCH ROLLERS**

**... the 3-axle tandem**

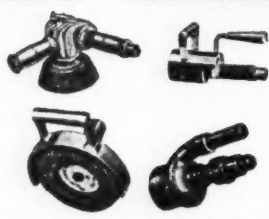
**SURFACE** irregularities vanish under the 3-axle tandem. As any one roll contacts a high spot, it automatically "borrows" additional weight for greater compaction. This, together with exclusive Buffalo-Springfield *synchronized steering* of the two guide rolls makes possible smoothness of rolling not possible with any other equipment. Ask your distributor for details.



**MASTER COST-SAVING EQUIPMENT—FOR IMMEDIATE DELIVERY**



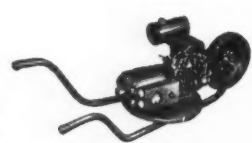
Gas or Electric Concrete Vibrators  
(Catalog No. 689)



Hand Tools for operating from all  
Master Vibrators and BIG-3  
(Catalog No. 683)



BIG-3 for Generation,  
Tool Operation and  
Concrete Vibration  
(Catalog No. 687)



Portable Gas-Electric  
Generator Plants, Sizes 500 to 17000  
Watts (Catalog No. 594)



General Purpose  
Floodlights



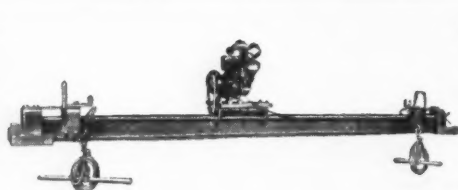
"Power-Blow" Electric  
Hammer and Spade  
(Catalog No. 688)



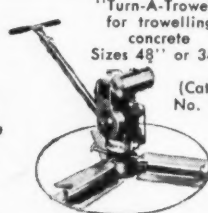
Electric  
Pavement  
Breaker  
(Cat. No. 718)



Gas or Electric  
Back-Fill Tamper  
(Catalog No. 699)



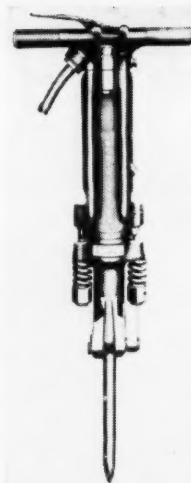
Vibratory Concrete Finishing Screed, Sizes 6' to 30'  
(Catalog No. 596)



"Turn-A-Trowel"  
for trowelling  
concrete  
Sizes 48" or 34"  
(Catalog  
No. 685)



Send for illustrated catalog on any item to  
**MASTER VIBRATOR COMPANY**  
 DAYTON 1, OHIO

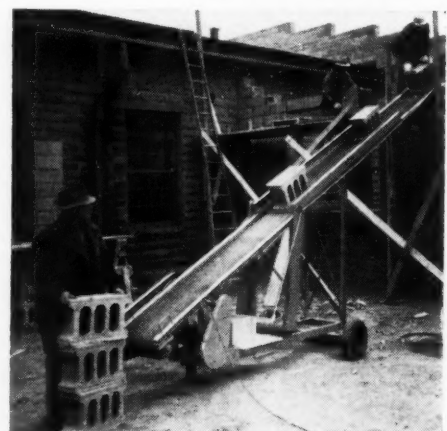


**PAVING BREAKER** features positive action, end-seating, automatic valve not affected by wear, large-capacity built-in lubricator, fully cushioned piston, heavy-duty, interposed anvil block with large striking surface, and spring-cushioned side rods. Self-locking nuts are used throughout and cylinder is precision ground, hardened and honed for greater efficiency and longer life.—Worthington Pump & Machinery Corp., Harrison, N. J.

ciency and longer life.—Worthington Pump & Machinery Corp., Harrison, N. J.

**READY-TO-USE FOUNDATION FORM** is said to reduce forming time and cost by providing faster erection, alignment on one side only and faster stripping. Made of steel, it is welded into rigid form 2x8 ft. and 2x6 ft. Simplified method of tying with standard Uni-Form tie assures accurate forming and spreading. Steel angles have milled slots for ties to prevent seepage and assure tight forms and smoother concrete surfaces. Other features are rigid outside corners and simplified method of forming inside corners and pilasters.—Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago, Ill.

**PORTABLE CONVEYOR** easily and quickly lifts concrete blocks to working levels on one-story buildings. Handipiler handles bags, cases, blocks,



bricks and packages of many kinds. Adjustable boom extends up to 10½ ft., stacks as high as 14 ft. Conveyor handles items weighing up to 100 lb. It is electrically operated by a.c. or d.c. circuit.—Standard Conveyor Co., North St. Paul, Minn.





**70 TONS  
-7% GRADE**

## HYDROTARDER

**. . . . . makes it safer and cheaper!**

Here's another example of the Hydrotarder lowering costs and increasing safety of truck operation in hilly country.

This Euclid diesel tractor with Easton trailer in South America is hauling a pay load of 40 tons of iron ore from mine to smelter. Its route is down a 7% grade, and the Parkersburg Hydrotarder is holding this 70 ton gross load to a speed of 7 miles per hour without the aid of mechanical brakes.

In equipping this tractor-trailer with the Hydrotarder, the operators will save hundreds of dollars on brake linings alone; will substantially reduce wear

on the engine and transmission, since it will not be used to help check the speed of the tractor; will minimize tire wear by elimination of sudden "slow-downs"; will save on fuel and oil and have the extra safety of dependable, uniform, completely controlled descending speed.

As it has for scores of others, the Hydrotarder is solving the braking problem on this heavy hauling job in South America. Write today, and learn how the Hydrotarder can solve your braking problem while lowering truck operating costs.

### **Parkersburg HYDROTARDER**

**THE PARKERSBURG RIG & REEL COMPANY**  
PARKERSBURG, W. VA.

Manufacturers since 1931 of the famed Hydromatic Brake—the load retarder which makes possible the drilling of deep oil wells safely and economically. Its counterpart, the Hydrotarder, enables motor transportation to operate with greater safety, economy, and speed than was ever heretofore believed possible.

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**HETZEL BROTHERS**

*Engineers and Manufacturers*

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**THE WINTER-WEISS COMPANY**

22nd and Blake Sts., Denver 2, Colorado

**The Pointer-Willamette Company**

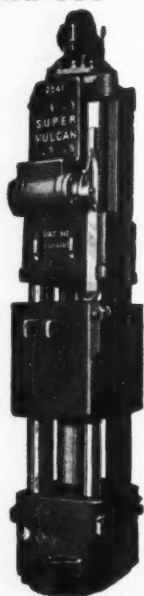
238 N. E. Oregon St., Portland 14, Oregon



Get rapid dependable  
**ACTION** with

**SUPER-VULCAN  
OPEN TYPE  
DIFFERENTIAL-ACTING  
PILE HAMMERS**  
18c, 30c, 50c and 80c

• That's right. Using 25 to 35 per cent less steam per blow, the Super-Vulcan delivers twice the usual blows per minute and rams them home with greater penetration per blow. Its fast, dependable performance, coupled with compactness for easier operation, rugged strength, simple design and positive action, bring you savings in time, maintenance and money. Too, the open type Super-Vulcan fits the same leads and uses the same accessories as the Vulcan Single-Acting Pile Hammer — for interchangeable efficiency. Write for full details. Get Super-Vulcan's time, trouble and money saving advantages.



Size  
18C—30C—50C—80C  
meet all needs

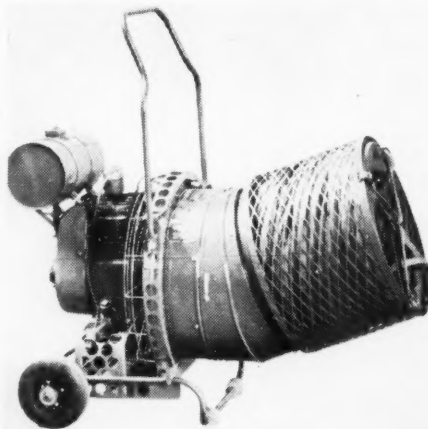
**VULCAN IRON WORKS**  
Since 1852

331 North Bell Avenue



Chicago 12 --- Illinois

**SELF-POWERED VENTILATOR** is said to be useful for cooling machinery and hot spaces, such as repair shops, ventilating tunnels, manholes, storage tanks, and gasoline barges. Outfit consists of high-capacity fan powered by lightweight gasoline engine and electric motor with wire



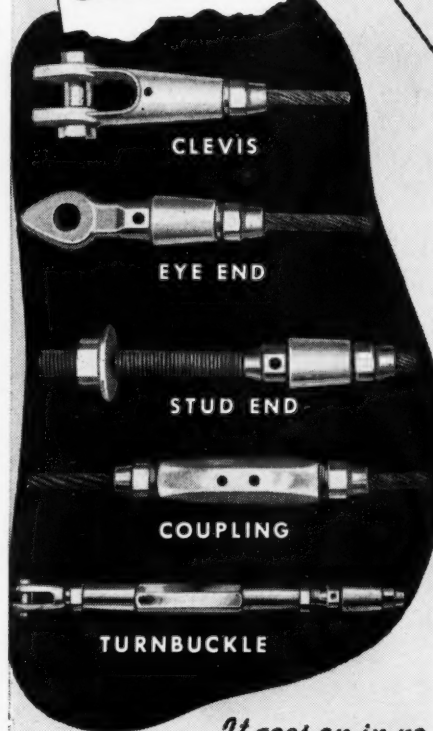
cage containing collapsible 14-in.-dia., 16-ft. long directional air duct of weather and heat resistant material. Duct and cage are quickly removable from unit. Air delivery is adjustable up to 4,500 cu. ft. per minute. Ventilator is mounted on light, tubular metal frame equipped with two rubber-tired wheels. It weighs only 87 lb., complete with duct.—Herman Nelson Corp., Moline, Ill.

**PORTABLE STEAM CLEANER** is equipped with super-heating burners that generate steam in 10 min. for cleaning dirt, grease and grime from motors and equipment of all kinds.



Unit is entirely automatic, burns low-cost oil or gas and can be moved about and operated by one man. Has large-capacity, heavy-duty boiler and is equipped with safety devices. Specially prepared chemicals are used in connection with steam.—Siebring Mfg. Co., George, Iowa.

**Stronger THAN  
THE WIRE ROPE  
ITSELF . . . this  
Electroline -FIEGE  
CONNECTOR**



*It goes on in no time — and hangs on for all time: this simple, husky device. Simply put the cable end through the sleeve, spread the strands, insert and drive in the plug, apply the socket and set in tight. Through the ingenious inspection hole you can see by the twisted strands that the joint is perfect.*

These better connectors dampen vibration, prolong wire rope life. These advantages, plus low cost installation and life-time service, have made them the standby in the shipbuilding and construction industries, and wherever wire rope and cables are used. Available through your mill supply distributor.

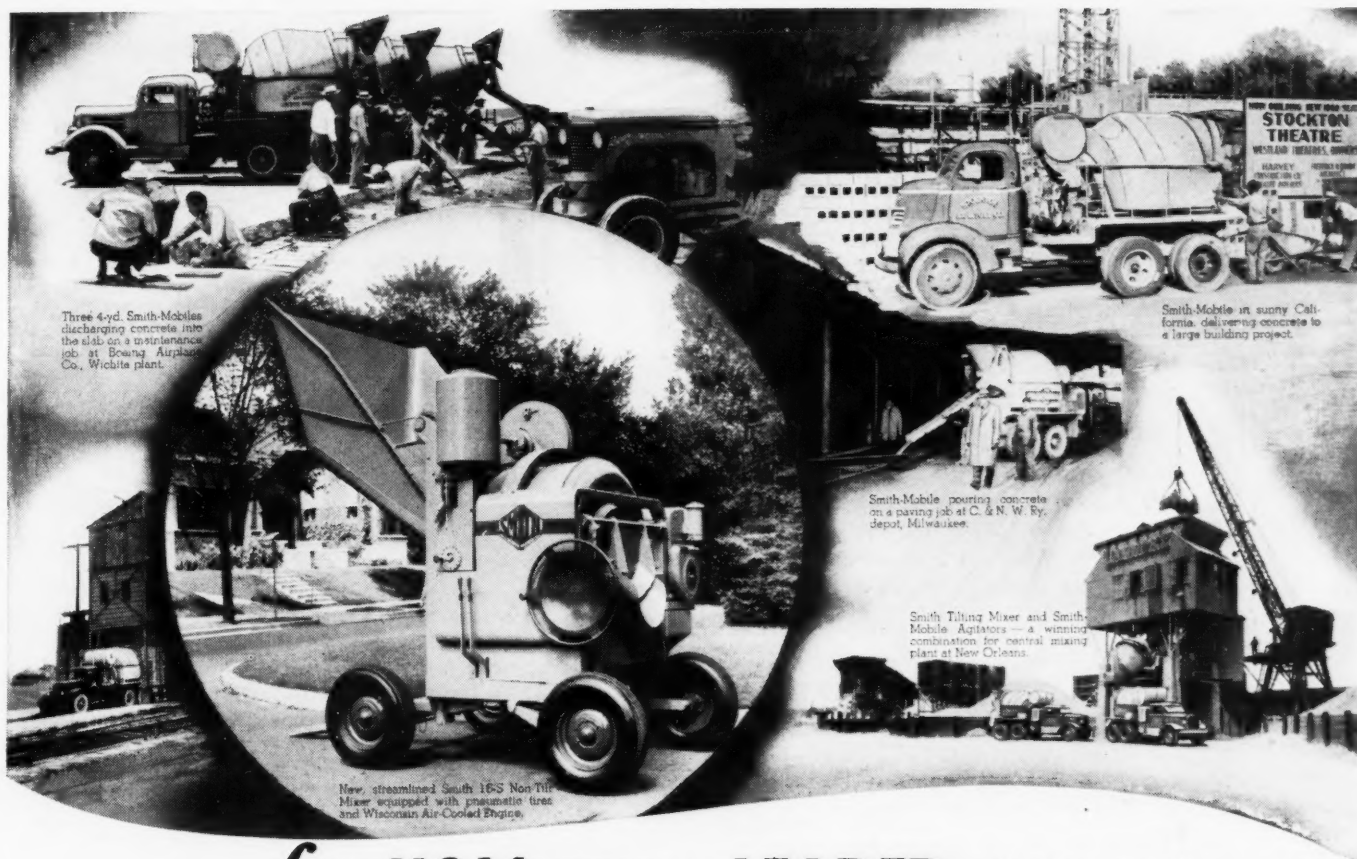


MANUFACTURED SOLELY BY

**Electroline Company**

4121 SOUTH LA SALLE STREET  
CHICAGO 9, ILLINOIS





Three 4-yd. Smith-Mobiles discharging concrete into the silo on a maintenance job at Boeing Airplane Co., Wichita plant.

Smith-Mobile in sunny California, delivering concrete to a large building project.

Smith-Mobile pouring concrete on a paving job at C. & N. W. Ry. depot, Milwaukee.

Smith Tilling Mixer and Smith-Mobile Agitators—a winning combination for central mixing plant at New Orleans.

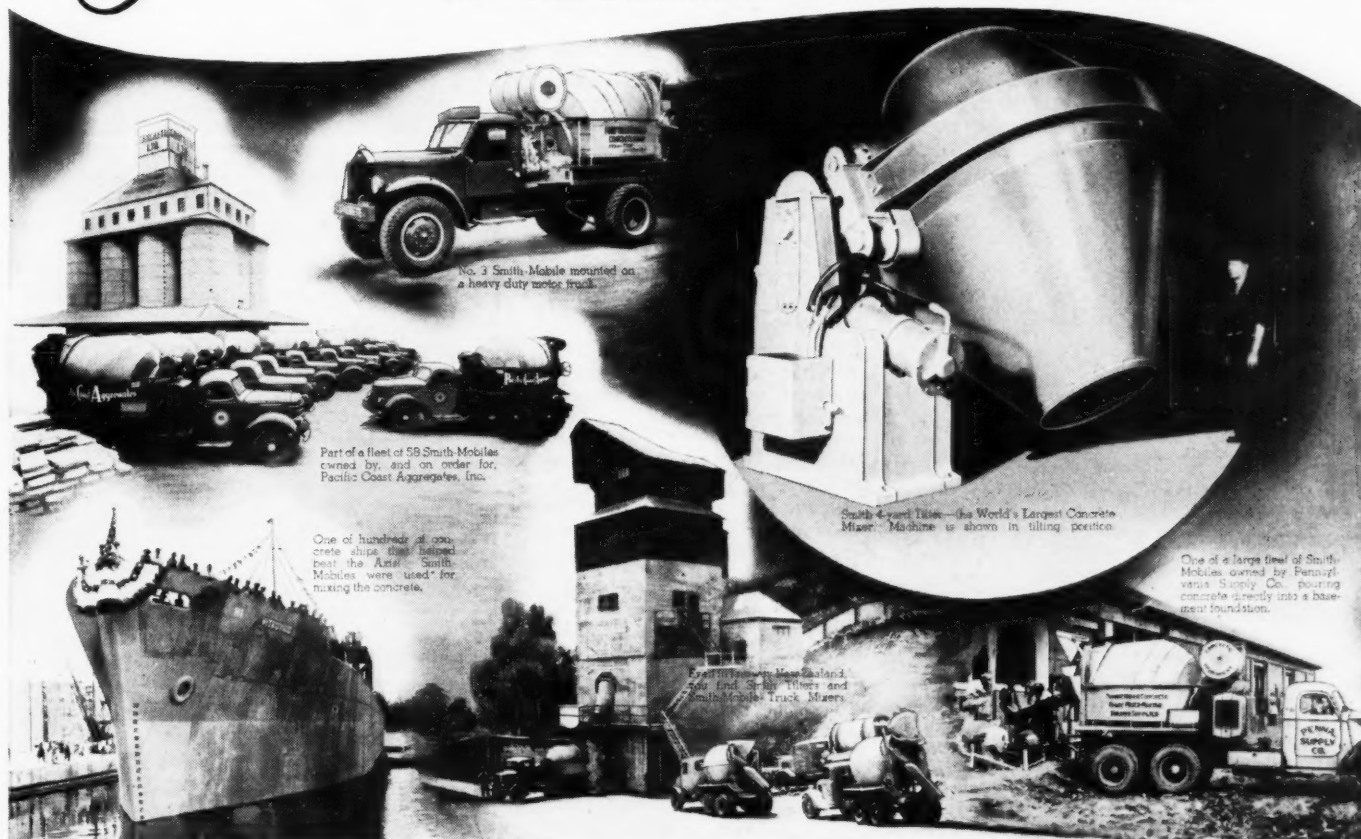
New, streamlined Smith 16S Non-Tilt Mixer equipped with pneumatic tires and Wisconsin Air-Cooled Engine.



## for 46 Years... **LEADER** of the Industry!

In every section of America . . . and in most foreign countries . . . you'll find Smith Mixers and Smith-Mobile Truck Mixers producing big batches of uniform concrete on a fast production basis. Smith continues to be the first choice of experienced contractors and engineers. When faced with the problem of producing mass concrete on scheduled time, they generally specify Smith Mixers or Smith-Mobile Truck Mixers. These dependable machines are being built today *better than ever*, for big yardage and long life. Let Smith Engineers solve your concrete problems. Write today.

THE T. L. SMITH CO., 2851 N. 32nd Street, Milwaukee 10, Wis., U. S. A.



No. 3 Smith-Mobile mounted on a heavy duty motor truck.

Part of a fleet of 58 Smith-Mobiles owned by, and on order for, Pacific Coast Aggregates, Inc.

One of hundreds of concrete ships that helped build the Axis. Smith-Mobiles were used for mixing the concrete.

Smith 4-yard Tiller—the World's Largest Concrete Mixer. Machine is shown in tilling position.

One of a large fleet of Smith-Mobiles owned by Pennsylvania Supply Co., pouring concrete directly into a basement foundation.

# MORE PROFIT ON BIG CONCRETE JOBS

## VIBER-ATION

*Finishes The Job Fast!*

Dependable, high speed vibration has long been a proven VIBER advantage for fast, thorough consolidation and uniform density. VIBERS give you 9,500 RPM, in concrete, for effective vibration without the "walloping of forms." The action of VIBERS is smooth, steady and resultful.

Three types of power—electric, air and gasoline. All units are interchangeable. Delivery at once. Send today for new Viber catalog.

# VIBER

SINCE  
1931

COMPANY

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ORIGINATORS

OF INTERNAL CONCRETE VIBRATION

# STAY IN THE LEAD By using the HI-WAY MODEL R MATERIAL SPREADER



Furnished in 6 widths—  
from 8 to 13 feet

Write for detailed specifications

## HIGHWAY EQUIPMENT COMPANY, INC.

Manufacturers of the World's Most Complete Line of Spreaders  
CEDAR RAPIDS, IOWA, U.S.A.

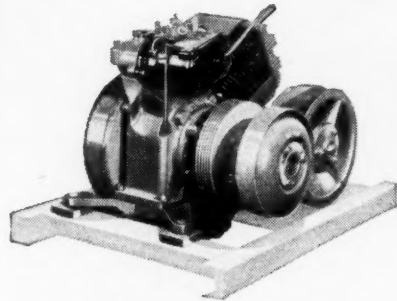
Reversible transmission on both the feed roller and agitator permits changing from forward to reverse motion, or vice versa, by simply shifting a lever.

The Swivel-type Adjustable Hitch allows the traction wheels of the Spreader to be on the ground at all times regardless of what position the truck or spreader is in. Easily coupled and uncoupled.

Disengaging lever for coupling and uncoupling is extended to the outside of the spreader, eliminating danger for the operator.

Sold and distributed by leading Construction Machinery Dealers throughout the United States and foreign countries.

**POWER PACKAGE** provides completely automatic driving unit in which drive ratios are controlled by driven unit and clutch engagement is controlled by engine speed. Automatic transmission consists of variable diameter drive pulley, variable diameter driven pulley, and V-belt



which form coordinated assembly to give automatic, infinitely variable ratios over 4-to-1 range. Clutch-built into drive pulley is automatic, centrifugally operated opposed shoe type. Engine is single-horsepower, four-cycle, air-cooled type, developing 6.5 hp. at 3,200 rpm. or 1/3 hp. per cubic inch of displacement.—Salsbury Motors, Inc., 4464 District Blvd., Los Angeles, Calif.

**CHAIN SAW**, gasoline-engine driven, features machine of 20-in. cutting capacity for one-man operation and 24- and 30-in. for two men. Engine is 4-hp., one-cylinder, two-cycle, air-cooled type. Built of lightweight



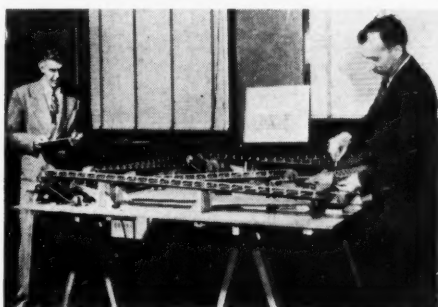
aluminum or magnesium die castings, it is self-contained. Features include positive fuel injection system, chain and guide bar which permits accurate setting and locking of frame to provide proper tension of chain and oil and gas tanks built into engine shroud. Weight of 24-in. saw is 54 lb. and of 30-in. saw 57 lb.—Reed-Prentice Corp., Worcester, Mass.

**WATER FILTRATION UNIT** is ruggedly constructed, easily portable, hand-operated pump, diatomaceous earth feeder and filter which is capable of delivering 2 gal. of filtered water per minute. Constructed of rust-and corrosion-resistant materials, Pur-O-Pumper has two parts and weighs about 55 lb. Pumping unit consists of self-priming, synthetic rubber vaned impeller, rotary displacement pump made of bronze with impeller mounted directly on extended crankshaft and pump mounted on



tripod stand. Filter unit is stainless steel tank 5 in. diameter equipped with pressure gage, precoat feeder and connections. Tank contains cylindrical aluminum oxide filter stone mounted directly on cast filter cover. Water from filter unit is collected in Lyster bag or other container and purified by addition of ampule of calcium hypochlorite. — **Proportioneers, Inc.**, 92 Coddling St., Providence, R. I.

**TWO-WAY CONVEYOR BELTS** are installed in manner that permits each one to carry material on return run, thus continually utilizing its top cover. Belt, first of its kind, has main application in steel industry where ore can be hauled in and slag taken



out on return trip. Shown with four miniature models are **C. F. SMITH** (left), of belt engineering sales department, who designed them, and **P. D. SULLOFF**, of mechanical goods design department. — **The Goodyear Tire & Rubber Co.**, Akron, Ohio.

**PORTABLE OXYACETYLENE CUTTING OUTFIT** known as Pak-Kut, includes two aeronautical shatter-proof oxygen cylinders with com-



bined capacity of 44 cu. ft., acetylene tank of 10-cu. ft. capacity, pre-set regulators, test gage, hoses, cutting torch, wrench, goggles, gloves and step-by-step instruction manual. En-  
(Continued on page 162)

**THIS BULLETIN  
tells HOW...WHEN...  
WHERE to specify**



#### **SIMPLE DIAGRAMS—TELEGRAPHIC EXPLANATIONS**

... make this Blaw-Knox Bulletin not only useful and profitable, but quick and easy to read as well.

One suggestion taken from it may save you thousands of dollars.

*Send for Bulletin No. 2035 on your letterhead.*

**BLAW-KNOX DIVISION of Blaw-Knox Company**  
2086 FARMERS BANK BUILDING, PITTSBURGH, PA.

**BLAW-KNOX STEEL FORMS**

## Contractor Leases a Shovel and Finds the Dipper to be an "Old Friend"

For use on the relocation of Pennsylvania Highway 930 between Moaca and Aliquippa, S. J. Groves & Sons Co. leased from the Geo. M. Brewster Co. the Lima shovel shown in Picture A-524 loading a Euclid bottom dump truck with an Amsco Renewable Lip Dipper.

Regarding the dipper an official of S. J. Groves & Sons Co. wrote: "We have many times specified Amsco buckets in our past orders to manufacturers for new equipment.

... Our experiences with buckets of your make have been very satisfactory."

The job had its unusual angles. 1,200,000 cubic yards of heavy clay and rock were excavated, much of it under difficult conditions, consequent to "slides" which occurred when the soil at the foot of the hills was disturbed. The unstable underoil (a fire clay base) caused the road to slip continuously, a danger to both highway traffic and the operation of the P. & L. E. Railroad. A scarcity of locations at which

to dump caused concern and much of the material was hauled upgrade and placed in ravines beyond the crest of hills. Since the original yardage estimate was greatly increased by the "slides"



contract completion extended beyond the specified date.

Despite all these "headaches" the contractor was able to say a good word for the Amsco dipper. Where the going is tough, Asmc manganese steel dippers cause a minimum of out time for dipper repairs. Correctly designed for faster digging and fuller loads, they speed operations and reduce the cost per yard.

Send for Bulletin 1143 C.I.—  
"The Toughest Steel Known"  
for the Construction Industry

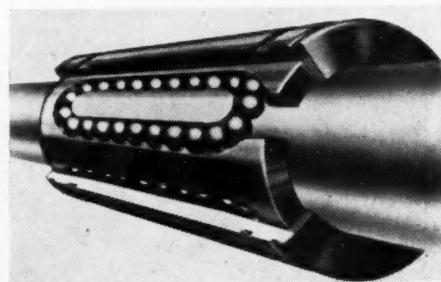
Joliet Steel Limited, Joliet, Quebec, owned by American Brake Shoe Company, produces and sells Amsco Manganese Steel Castings in Canada.



R-701. Amsco All-manganese-steel Renewable Lip Dipper. Interior is smooth. No clay building or arching of material. Lips and teeth are shaped for fast, clean cutting.

(Continued from page 161)  
tire outfit, weighing 56 lb., is mounted in flame-resistant canvas pack which can be quickly strapped across shoulders and buckled firmly in comfortable position. When not in use it is packaged in easily carried, sturdy aluminum case for storage.  
—National Welding Equipment Co.,  
218 Fremont St., San Francisco, Calif.

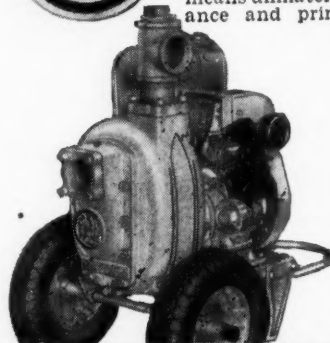
**ANTI-FRICTION BEARINGS** bring advantages of ball bearings to linear motion, such as savings from use of smaller drive motors, gears, linkages,



etc.; operating economies due to reduced load, longer life, increased reliability, less servicing, higher operating speeds and sustained precision. Standard ball bushing sizes vary from 1/4-in. shaft size to 4 in.—Thomson Industries, Inc., 2905 Review Ave., Long Island City, N. Y.



**They Can Take It  
DUAL PRIMERS**  
When it comes to DURABILITY, CMC Dual Primers have the "guts" to stand up to those tough, steady 24-hour grinds. DUAL PRIME means unmatched performance and priming speed.



A husky 3" CMC Dual Prime. One of the complete line from 1 1/2" to 10" sizes. Also 3" and 4" Diaphragms. Get catalog.

**CONSTRUCTION MACHINERY CO.**

Waterloo, Iowa

Mixers • Pumps • Hoists • Batching & Placing Equipment • Saws • Carts • Barrows

**AMSCO**

Foundries at

Chicago Heights, Ill.; New Castle, Del.;

Denver, Colo.; Oakland, Calif.;

Los Angeles, Calif.; St. Louis, Mo.

Offices in Principal Cities

**AMERICAN MANGANESE STEEL DIVISION**  
CHICAGO HEIGHTS • ILLINOIS

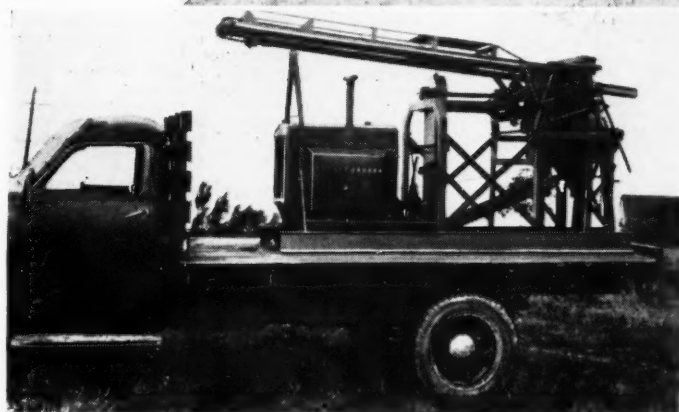
**AMERICAN  
Brake Shoe  
COMPANY**



Here is the **DEEP HOLE** Drill that makes

# Quick Work

of soil testing and prospecting ...



## 100% Portability!

Here's how the HBH Earth Drill looks in traveling position.

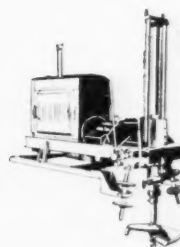
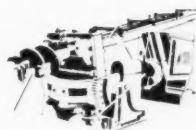
**T**HE Buda Model HBH Deep Hole Earth Drill is an unbeatable tool for fast, accurate, low-cost soil testing and prospecting for materials under the ground. Expertly designed and sturdily built, this self-powered unit drills holes up to 100 feet in depth, at an average of better than a foot a minute. Time lost in setting up or moving, is negligible, because of the drill's complete portability. Here, then, is the answer to your needs for a better, more dependable deep hole drill. See your nearest Buda distributor or write us.

Write for literature

# BUDA

15430 Commercial Avenue  
HARVEY (Chicago Suburb) ILLINOIS

Buda Model HBE  
Earth Drill.  
Cradle-mounted.  
Ideal for power  
pole work.



Buda Model HBD  
Earth Drill. Rigid  
Head. Ideal for  
construction  
work.

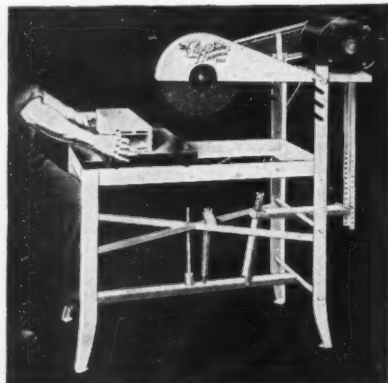


## FASTER CUTTING

...with

### Clipper Masonry Saws

Your Special Size and Shape Brick or Concrete Block can now be "Tailor-Made" at a moment's notice!



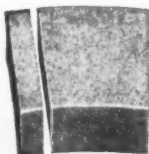
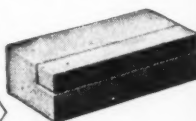
The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.



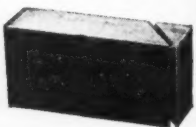
This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces—made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnesite brick was cut in 12 seconds!



You Can Have a CLIPPER ON TRIAL Write for CATALOG



**CLIPPER MFG. COMPANY**

4035 Manchester, St. Louis 10, Mo.

**NEW-TYPE ROLLER BEARING** is capable of carrying heavier loads at higher speeds and lower temperatures, which is expected to facilitate wind tunnel operations and many other industrial processes. Spherical roller thrust bearing has self-aligning principle which compensates for shaft deflections, distortions or weaves, permits heavy loads to be evenly distributed over all rollers and eliminates danger of overloading. Cage retaining sleeve pressed into bore of inner ring makes contained assembly of rollers, cage and inner ring.—SKF Industries, Inc., Philadelphia, Pa.

**FURNACE UNIT** produces steam or hot water heat and domestic hot water and eliminates boiler. Whirl-O-Matic packaged heating unit combines boiler, fuel oil burner and complete factory installed combustion controls in modern streamlined cabinet 36 in. high, 42 in. long and 22 in. wide. Prefabricated unit is supplied with all necessary parts, including Minneapolis-Honeywell controls, low water cut-off, central flame tube, 3-pass horizontal high pressure steam unit, flash boiler and hot water coils.—Persiro Mfg. Corp., 38 Keer Ave., Newark 8, N. J.

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*Surfaces*  
quickly laid  
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immediate use  
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give long service  
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New York 17  
**KOTAL** *Master Mixes*  
The Advanced All-Weather  
Aid in Building Better Roads

## Complete, comprehensive guide to piping design and application

—The data and methods you need for solving every piping problem

HERE is an indispensable tool for the engineer, contractor, and designer, the famous **PIPING HANDBOOK**—now available in a new, up-to-date, fully revised, enlarged Fourth Edition. This vast compilation of data and methods for most effective use of piping puts at your fingertips all the principles that influence the design, construction and use of piping systems. Any fact, on any phase of piping practice, is here in clear, dependable, accessible form.

## PIPING HANDBOOK

By **SABIN CROCKER**

Senior Engineer, Engineering Division. The Detroit Edison Company

Revised, enlarged, up-to-date  
**FOURTH EDITION**

1376 pages, 4½ x 7½  
334 illustrations,  
329 tables, \$7.50

THIS vast handbook covering the fundamentals, materials, and techniques of modern piping practice is now enlarged by 500 pages, including four new chapters in line with the increasing importance of piping systems in industrial operations. Tables and charts, abstracts, standards, specifications, etc., have been revised and improved, and scores of new facts and figures added. Now more than ever the **PIPING HANDBOOK** is an invaluable self-contained key to effective piping practice.

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Steam Power-plant Piping  
Building Heating  
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## EQUIPMENT MEN and Their Companies



**George P. Torrence**, president of Link-Belt Co., Chicago, from 1911 to 1936, rejoined the company July 1 as executive vice-president. He will become president Nov. 1 upon the retirement of

**William C. Carter** from that post. Mr. Carter has been named chairman of the executive committee, with **Howard Coonley** and **Russell Livermore** as fellow members. Mr. Torrence has spent the past 10 years in Cleveland as vice-president and general manager of The Rayon Machinery Corp. and as president of The Cleveland Pneumatic Tool Co.

**Fowler McCormick** has been elected chairman of the board of International Harvester Co., Chicago, Ill., succeeding **Judson F. Stone**, who will continue to serve as a director and as a member of the executive committee of the board. Succeeding Mr. McCormick as president is **John L. McCaffrey**, formerly first vice-president. **W. E. Worth**, formerly second vice-president, and **P. V. Moulder**, formerly vice-president in charge of the motor truck division, have been elected executive vice-presidents. **W. C. Schumacher**, formerly sales manager of the motor truck division, succeeds Mr. Moulder as its head with the title of general manager.



**Charles E. Heintz**, who has been general sales manager of Elastic Stop Nut Corp. of America, Union, N. J., for 2 years, has been elected vice-president in charge of sales.

Operation of the new Bronx, N. Y., warehouse of United States Plywood Corp. will be directed by **Monroe W. Pollack**, vice-president in charge of metropolitan distribution. First of its kind to be constructed since the end of the war, the one-floor, 60,000-sq. ft. structure is built entirely of brick, steel and concrete.



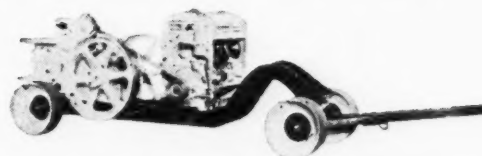
# LUFKIN

Built to take constant knock-about usage. Rust-resistant line also available with hook-ring for one-man measuring. Your dealer has Lufkin Chrome Clad Steel Tapes. Write for free catalog.

THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City

# Reliance

**NOW  
Ready  
To Serve You**



### Reliance Products

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand and Gravel Spreaders, Wash Boxes.

NOW—you may profit by our vast experience providing the Armed Forces with rugged equipment for Crushing, Screening and Conveying concrete aggregates, and other machinery for ROAD BUILDING.

Reliance Equipment available for prompt delivery. Write us your requirements today.

## UNIVERSAL ROAD MACHINERY CO.

Kingston, N. Y., U. S. A.

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## LACLEDE WELDED DOWEL SPACERS

### RIGID - ACCURATE

**FOR CONTRACTORS, LACLEDE DOWEL SPACERS** provide a light weight, economical method of placing dowels and joints. Distribution bars, supports, and dowel sleeves are all welded into one integral unit for rapid joint assembly. Shaped tie wires accurately locate fibre or steel joint materials.

**FOR ENGINEERS, LACLEDE DOWEL SPACERS** provide a rigid, accurate, prefabricated assembly for holding each end of each dowel in exact location. Both horizontal and vertical alignment of the dowels can be maintained on even the most irregular subgrades within limits prescribed by highway engineers.

**LACLEDE STEEL COMPANY**  
ARCADE BUILDING      SAINT LOUIS 1, MISSOURI



**Kaiser Co., Inc.**, has announced the appointment of **Francis M. Rich**, formerly with The Steel Co. of Canada, Ltd., as vice-president in charge of operations at its

iron and steel plant, Fontana, Calif. In 1935 he received the J. E. Johnson, Jr., Award of the American Society of Mining and Metallurgical Engineers for his efforts in blast furnace development and improved production methods.

**C. Glenn Browning** has been appointed Eastern sales manager of Lehigh Portland Cement Co., with headquarters at 51 E. 42nd St. in New York City.

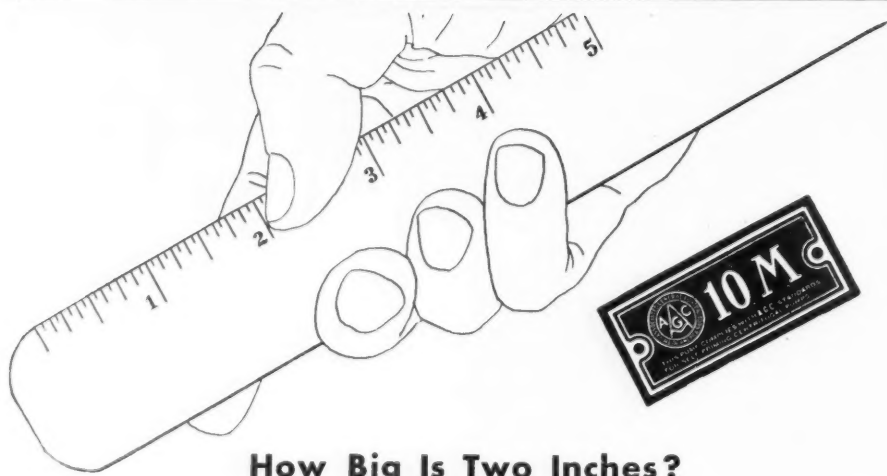
After 38 months in the Navy, **B. P. Spann** has returned to the Gardner-Denver Co., Quincy, Ill., as advertising manager. When discharged, he held the rank of lieutenant commander.

New construction engineer of Allegheny Ludlum Steel Corp., Brackenridge, Pa., is **George Bottcher**, who has been with the company since 1940. He was formerly with the Navy Department Bureau of Yards and Docks and the War Department Construction Division.

New brick building to house the expanded molded goods department of Hewitt-Robbins, Inc., at Buffalo, N. Y., is now under construction, according to **Frank Blanchard**, factory manager. The new structure will be 100x160 ft. This company recently changed its name from Hewitt Rubber Corp.

**Wilfred C. Owen** has been named executive vice-president of Detroit Steel Products Co., of Detroit, Mich. Since joining the company in 1914, he has been assistant shop superintendent, shop superintendent, general factory manager, vice-president and director.

Named manager of tire construction of The B. F. Goodrich Co., Akron, Ohio, **W. F. Billingsley** has been associated with this firm since 1929.



### How Big Is Two Inches?

Silly question? Not at all, that is, when you're speaking of pump sizes . . . and capacities!

For the size of a contractor's pump alone does not guarantee capacity or performance . . . unless the pump bears an AGC rating plate. That plate is your guarantee that a 2-inch pump will deliver the capacity set up by the AGC Contractors Pump standards for that particular pump. It is your assurance that when you buy size, you get the capacity you want!

To eliminate the guesswork in buying pumps, choose one bearing the AGC rating plate. Be sure of capacity and performance in advance!



#### CONTRACTORS PUMP BUREAU

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Mansfield, Ohio  
**CHAIN BELT COMPANY**  
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**JAEGER MACHINE CO.**  
Columbus, Ohio  
**G. H. & E. MANUFACTURING CO.**  
Milwaukee, Wis.

**CONSTRUCTION MACHINERY CO.**  
Waterloo, Iowa  
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**THE ASSOCIATED GENERAL CONTRACTORS  
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Kansas City, Mo.  
**CARVER PUMP CO.**  
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**THE GORMAN-RUPP CO.**  
Mansfield, Ohio  
**NOVO ENGINE CO.**  
Lansing, Mich.



# Outstanding advantages in all types of fleets

## Stanolube HD

Stanolube HD offers outstanding advantages regardless of the type of fleet you operate. Stanolube HD provides the ideal lubricant for any make of heavy duty gasoline or Diesel engine. Stanolube HD keeps all engines clean and at peak performance. In fact, the tougher the service the greater the need for this heat-resistant, detergent oil.

In addition, Stanolube HD will reduce deposits and wear in transmissions. Where transmissions tend to overheat and break down ordinary gear lubricants, the inhibitor in Stanolube HD will reduce oil oxidation, just as it does in an engine, and minimize deposit formation.

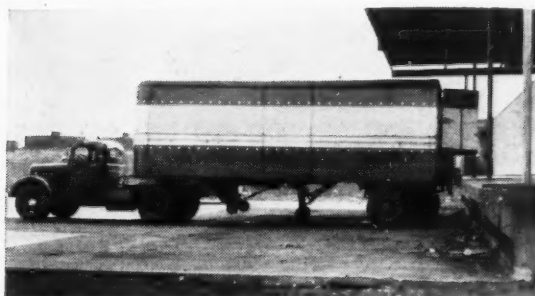
A Standard Oil Automotive Engineer is ready to help you put maintenance-saving Stanolube HD to work on your fleet. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois.

### ...in Contractors' Equipment



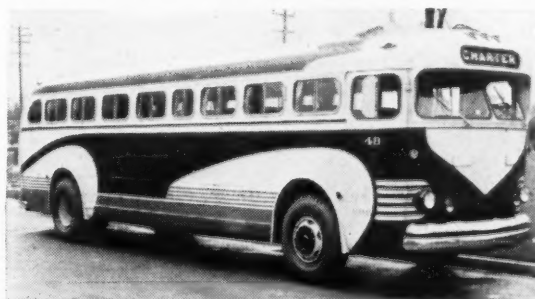
Stanolube HD can be used on heavy duty gasoline and Diesel powered equipment. Contractors need stock only one oil—eliminates danger of applying incorrect lubricants.

### ...in Truck Fleets



Both heavy duty over-the-road trucks and light trucks in delivery fleets can use Stanolube HD to advantage. The tougher the service the greater the need for this heat-resistant, detergent oil.

### ...in Bus and Taxi Fleets



Diesel or gasoline powered buses, taxicabs, other passenger car fleets now being lubricated with Stanolube HD ... all these widely varying types of service show a remarkable reduction in engine deposits and longer operation between overhauls.

**STANDARD OIL COMPANY (INDIANA)**

**STANDARD  
SERVICE**



# FORD TRUCKS LAST LONGER!

**More Ford Trucks in Use  
Today Than Any Other Make!**



## CONTRACTORS RUBBER PRODUCTS available from Stock for immediate Delivery

### CONVEYOR, ELEVATOR and TRANSMISSION BELTING

all widths and plys

**V-BELTS** all sizes

**HOSE** all sizes

AIR	WATER	SUCTION	COMPRESSOR
FUEL	STEAM	WELDING	PILE DRIVERS
FIRE	VACUUM	DISCHARGE	ROAD BUILDERS

and BOOTS, DREDGE SLEEVES, PUMP DIAPHRAGMS, ETC.

**and everything rubber for Industrial Requirements**

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62-66 PARK PLACE NEW YORK 7, N. Y.

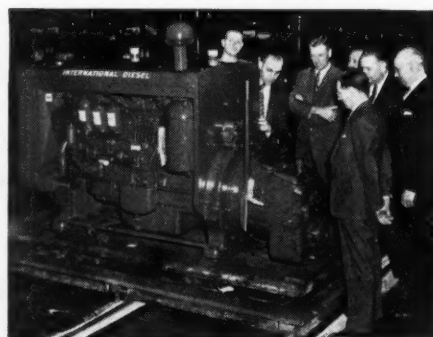
Phone: BArcley 7-9793

**B. Gordon Valentine**, designer of gasoline and diesel engines, has been appointed chief engineer of the Sterling Engine Co., Buffalo, N. Y.

New sales manager of the Alemite distribution division of Stewart-Warner Corp., Chicago, Ill., is **Charles I. Kraus**, former head of the company's industrial sales division. **Gustave Treffeisen** was named assistant sales manager.

**Millard H. Pryor** has returned to active duty as president of the Barnes Mfg. Co. after a leave of absence to serve as a commander in the U. S. Naval Reserve.

**First machine** to come off the line at International Harvester Co.'s newly acquired plant at Melrose Park, Ill., was a UD-18 diesel power unit. Inspecting it are (left to right): **Brooks McCormick**, assistant general super-



intendent; **Dante Chimenti**, general superintendent; **H. T. Reishus**, general manager, industrial power division; **George Berg**, assistant general foreman; **R. E. Bloye** (foreground), works manager; **Neal Higgins**, manager of sales, industrial power division; and **H. B. Rose**, manager of manufacturing, industrial power division.

**Stanley D. Means** has been named to the newly created position of domestic sales manager for R. G. Le-Tourneau, Inc., of Peoria, Ill. His duties will include management of eastern, central and western sales territories and governmental sales, as well as continued supervision of industrial sales.

**Marion Power Shovel Co.** is the new name of the Marion Steam Shovel Co., Marion, Ohio, according to an announcement by **M. E. Montrose**, president. A plant modernization and rehabilitation program is being directed by **John M. Demarest**, recently elected vice-president and works manager.



**Ceco Steel Products Corp.** announces the appointment of **George R. Wernisch**, recently discharged naval lieutenant commander, as manager of the firm's steel joist and roof deck division, with headquarters in Chicago, Ill.

**Division managers** of The Goodyear Tire & Rubber Co. recently assembled at the company's home office for discussion of sales plans. Looking over sales charts are (left to right): **R. W. Fitzgerald**, western division manager, Los Angeles; **D. W.**



**Sanford**, vice-president, Goodyear-California, Los Angeles; **F. W. McConky, Jr.**, northeast division manager, New York; **J. E. Mayl**, vice-president and sales manager, tire division, Akron; **J. A. Bailey**, south central division manager, Dallas; **A. Jae Sears**, north central division manager, Chicago; and **L. H. Shepherd**, southeast division manager, Atlanta.

**New chairman** of the Chicago Chapter of the American Society for Metals is **Harold L. Geiger**, head of the Chicago technical section, development and research division, The International Nickel Co., Inc.

**Business and plant** of North Bros. Mfg. Co., Philadelphia, Pa., has been purchased by The Stanley Works, New Britain, Conn. North Bros., founded in 1880 and makers of "Yankee" tools, will continue to operate with the same equipment and personnel, under the direction of **M. A. Coe**, Stanley general manager.

**John M. Coates** has been named assistant to the president of Masonite Corp., Chicago, Ill. He will continue to act as general counsel for the organization.

**Appointment** of **J. T. Myers** as assistant general sales manager has been announced by the Davey Compressor Co., Kent, Ohio. He was recently released from the Navy with the rank of lieutenant.

# 3 maintenance jobs where OAKITE CLEANING can save you money

Keeping your road building and excavating equipment in good working order depends largely on the efficiency of your maintenance cleaning procedures. You can get that efficiency by using specialized Oakite cleaning materials. They'll help you make significant savings on such jobs as these three:

## 1. Stripping Paint From Equipment

By using a recommended Oakite material, with the Oakite Solution-Lifting Steam Gun, Model No. 384, you can prepare equipment surfaces for repainting more easily, quickly. The combination of heat, mechanical force and effective paint-stripping action makes short work of removing old paint, caked-on oil, grease and muck! Leaves surfaces right for the new paint coat. Handles job on a low-cost basis and eliminates need for laborious hand-scraping.

## 2. Descaling Diesel Cooling System

Built-up lime scale in water jackets or radiators is a frequent cause of over-heating in Diesel and gasoline power units. Scored cylinders, loss of power, increased consumption of gasoline and oil are the inevitable results. You can solve this problem by periodically descaling cooling systems with Oakite Compound No. 32. Its remarkable dissolvent action thoroughly softens up scale for the knock-out rinse. A quick effective way to restore cooling system to normal operating efficiency.

## 3. Degreasing Parts Before Repair and Overhaul

When cleaning motor blocks, transmission, carburetors and other automotive parts, fast-working Oakite degreasing materials speedily, thoroughly remove dirt, grease and oil. This makes disassembly inspection and repair work easier. Helps expedite service work!

### FREE Technical Details

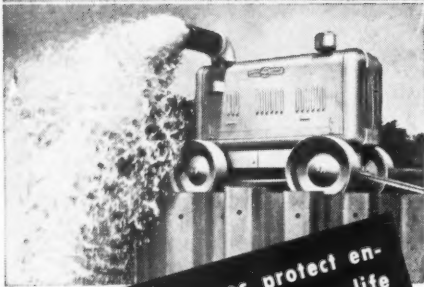
For further information on these or any other maintenance cleaning jobs, write on letterhead for **FREE** technical literature. Helpful data yours by return mail! No obligation, naturally.

**OAKITE PRODUCTS, INC., 246 Thames St., NEW YORK 6, N. Y.**

Technical Service Representatives Conveniently Located in All Principal Cities of the United States and Canada

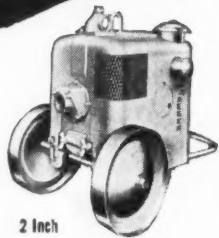
**OAKITE** *Specialized* **CLEANING**  
**MATERIALS • METHODS • SERVICE • FOR EVERY CLEANING REQUIREMENT**

## JAEGER BUILDS BETTER PUMPS INSIDE and OUT

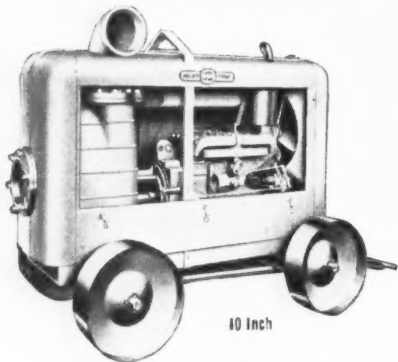


Modern enclosures protect engine efficiency...add longer life

Experienced contractors buy far more Jaeger "Sure Primes" than any other make of pump. They know that all "Sure Prime" pumps are better engineered, conservatively rated, powered with high grade engines and enclosed in modern housings that keep those engines dry, clean, quick-starting and smooth running for extra thousands of hours of low cost service.



### Protected Yet Accessible



Instant opening side panels admit to all operating controls. Enclosures are also designed to lift off or swing open for complete access when desired. One of many exclusive Jaeger advantages.



Capacities 3000 to 240,000 g.p.h.

### Only Jaeger Offers All These Features:

Inherent priming action plus "jet" priming—fastest and doubly sure . . . "Lubri-Seal," accessible for inspection . . . Self-cleaning shells . . . Replaceable liners or seal rings . . . Pumps individually tested and certified for performance.

### THE JAEGER MACHINE CO.

Main Office, Factory, Columbus, Ohio

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NEW YORK 17, N. Y. 226 N. La Salle St.  
235-38 Martin Bldg.  
BIRMINGHAM 1, ALA.



Don Smith, former sales manager of General Excavator Co., has been named vice - president and director of sales for Milwaukee Hydraulic Corp., Milwaukee, Wis. He began his association with the excavator industry in 1927 as a member of the Harnishfeger Co. advertising staff.

LaPlant-Choate Mfg. Co., Inc., of Cedar Rapids, Iowa, has established a factory branch at 1022 77th Ave., Oakland, Calif., which will include sales, service and parts headquarters for seven western states and Alaska, the Hawaiian Islands, and British Columbia. S. I. Harris, western division sales manager, will be in charge.

Open house and post-war equipment show was staged by Patten Tractor & Equipment Co. at its new building which occupies more than 3 acres of ground in Bellwood, Ill. This building includes a 12,000-sq. ft. service department and a complete motion picture theater.

## .. Meet the UNSEEN GUARDIAN

SYMBOL OF  
SISALKRAFT  
PRODUCTS



✓ **SISALKRAFT**  
... waterproof reinforced  
building paper

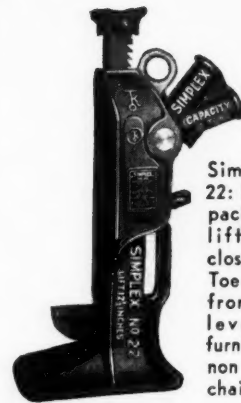
✓ **SISALATION**  
... reflective insulation and  
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SISALKRAFT**  
... Sisalkraft plus pure elec-  
tro deposit copper



THE SISALKRAFT CO.  
CHICAGO, ILLINOIS

## The Accepted General Purpose Jack



Simplex No. 22: 10-ton capacity, 12 1/2" lift. Height closed 21 1/4". Toe lift 2 1/4" from ground level. Also furnished with non-rotating chain cap.

The Simplex No. 22 Jack has time-saving operating speed and lifting range, combined with the vital safety features which earned Simplex Jacks the only gold medal for safety. You cannot get a better jack for general maintenance work, for moving machinery, heavy crates and similar loads. This single-acting, ratchet lowering jack has long been industry's 1st choice for general work. Send for new Catalog No. 45.

Templeton, Kenly & Co.  
Chicago 44, Ill.

Better, Safer Jacks Since 1899

**SIMPLEX**  
WORLD'S MOST  
COMPLETE  
LINE OF  
**JACKS**  
LEVER  
SCREW  
HYDRAULIC



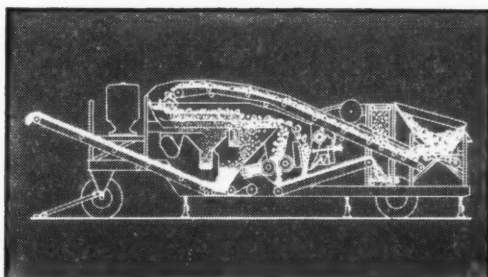
# Announcing...

the arrival of another new  
Cedarapids Portable Crushing Plant

## THE PITMASTER STRAIGHTLINE



small in size but **BIG** in low-cost production



### THE IOWA LINE

of Material Handling Equipment Includes  
ROCK AND GRAVEL CRUSHERS • BELT CONVEY-  
ORS—STEEL BINS • BUCKET ELEVATORS • VIBRA-  
TOR AND REVOLVING SCREENS • STRAIGHT LINE  
ROCK AND GRAVEL PLANTS • FEEDERS—TRAPS  
• PORTABLE POWER CONVEYORS • PORTABLE  
STONE PLANTS • PORTABLE GRAVEL PLANTS •  
REDUCTION CRUSHERS • BATCH TYPE ASPHALT  
PLANTS • TRAVELING (ROAD MIX) PLANTS •  
DRAG SCRAPER TANKS • WASHING PLANTS •  
TRACTOR-CRUSHER PLANTS • STEEL TRUCKS  
AND TRAILERS • KUBIT IMPACT BREAKERS

Yes, sir! We're the proud parents of a new husky youngster that gives every promise of living up to the records of low-cost production of quality aggregate established by its big brothers, the Cedarapids Junior and Master Tandems. Operators are reporting production of more than 50 tons per hour of  $\frac{1}{2}$ " material with 55% crushing.

10" x 16" roller bearing jaw crusher and 16" x 16" roller bearing roll crusher give you plenty of crushing output. Horizontal vibrating screen assures greater capacity, closer grading, higher efficiency and requires less head room. Available with chip screen, hopper and feeder or swivel feed conveyor. Fast, easy set-up and take-down minimize lost time between jobs. No drives to connect. Conveyors swing easily into position.

When buying a crushing plant—buy the best—buy Cedarapids. If your requirements are moderate—buy a Pitmaster Straightline.

**Iowa Manufacturing Company**  
**Cedar Rapids, Iowa**

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"The Name that Carries Weight"  
MATERIAL HANDLING EQUIPMENT

## END DUMP CARTS

—All Types of  
Special  
Handling Equipment  
for the  
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Trailer Trucks, Tractor Cranes,  
Tool Wagons, Utility Carts . . .  
Material Handling Equipment  
of every type. Designed to your  
requirements by experienced  
engineers. Literature available.  
Inquiries Invited!



Mercer End Dump Cart. Trailer type. Ideal for handling bulk. Acute pitching angle. Designed to dump free and clean. Various sizes. Furnished with steel or vulcanized-on solid rubber tire wheels.

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Plant: Clifton, N. J.  
SALES REPRESENTATIVE  
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With a  
MOUTHFUL AT  
EVERY BITE

For faster digging,  
ease of handling  
on difficult jobs  
and lowered oper-  
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a line on an Owen  
Bucket".

Owen designs and builds to meet  
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The workings of an improve-  
ment-conscious engineering  
department are evidenced  
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where on dredging, ex-  
cavating and material  
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BRANCHES: New York, Philadelphia,  
Chicago, Berkeley, Cal.

Write FOR  
THE NEW CATALOG

## New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below  
will keep you posted on latest develop-  
ments in construction equipment and ma-  
terials available for your use



**MEN OF VISION—**  
(36 pp., illustrated)  
Points to major  
role played by re-  
search and engi-  
neering experts in  
development of  
Caterpillar prod-  
ucts. Story chron-  
icles advancement  
since days of horse-

drawn combined harvesters and shows  
evolution of company's machinery  
against background of engineering  
and research skill.—**Caterpillar Trac-  
tor Co., Peoria 8, Ill.**

**BULLDOZERS —** (4-p. folder) De-  
scribes three models of Trojan bull-  
dozers now in production. Features  
listed include parallel blade lift,  
steady flow hydraulic valves, hydrau-  
lic power, draw-bar and rear power  
take off shaft, full axle clearance, and  
quick change from dozer blade to  
auxiliary equipment. Also pictured  
is heavy-duty vee-type snow plow.  
Specifications for these units, which  
are designed for use with Interna-  
tional industrial wheel type tractors,  
are given.—**Contractors Machinery  
Co., Inc., Batavia, N. Y.**

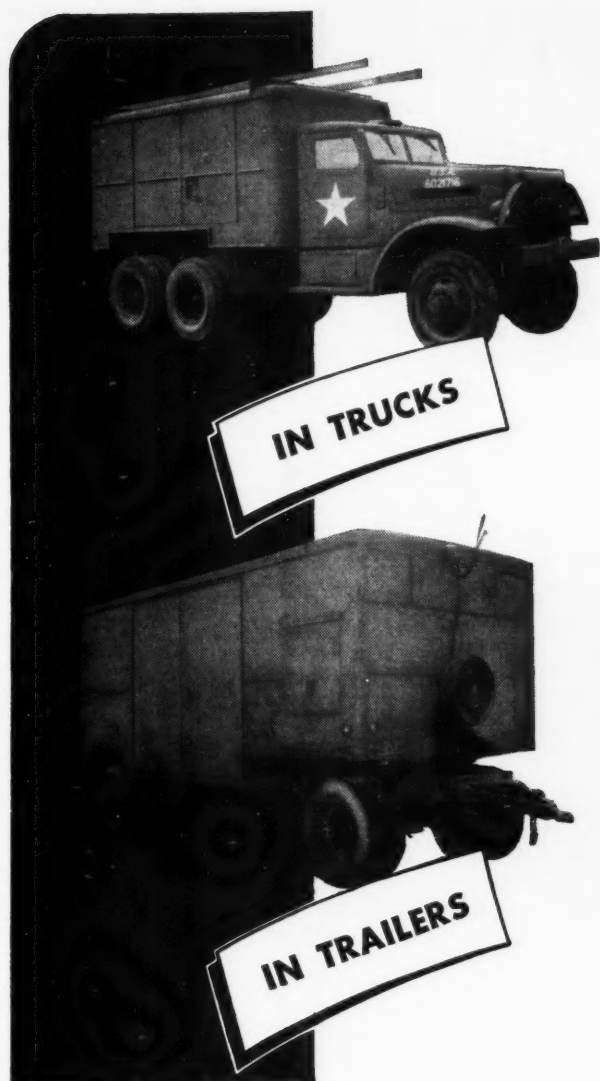
**AXLES AND VALVES—**(pocket-size  
booklet) Illustrates and briefly de-  
scribes company's peacetime products  
and new products developed in its  
research laboratories for industrial  
markets. Included are two-speed and  
single-speed truck axles, engine  
valves, and valve lifters and tappets,  
as well as many others.—**Eaton Man-  
ufacturing Co., Cleveland 10, Ohio.**

**ELECTRODE CHART—**Guides users  
in choice of correct electrode for  
specific job. Tells what electrode to  
use, suggests applications, shows cur-  
rents, positions and physical charac-  
teristics. Recommendations are made  
for mild, low alloy and stainless steels,  
non-ferrous and cast iron, surfacing,  
and gas welding rods.—**Hollup Corp.,  
4700 W. 19th St., Chicago, Ill.**



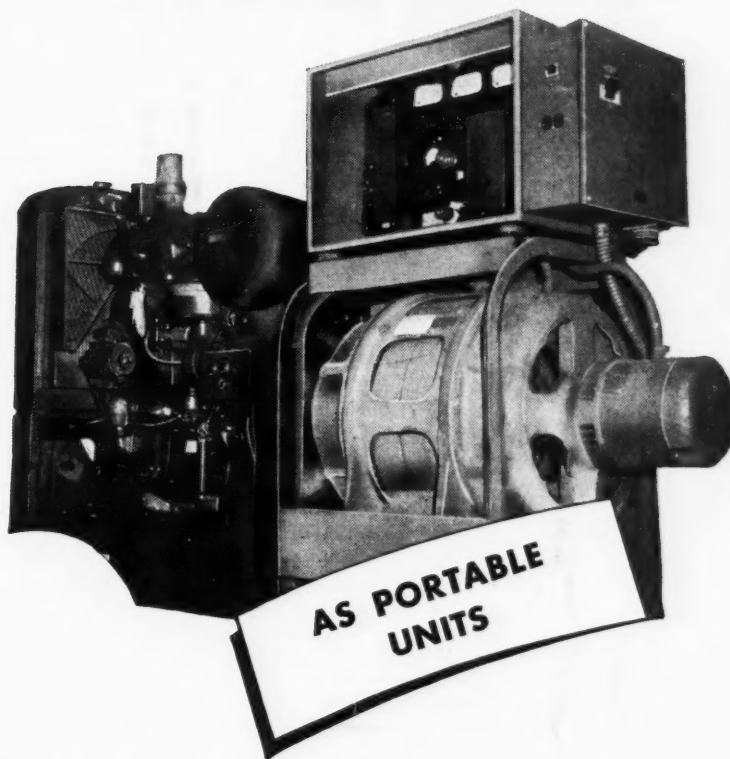
# ELECTRIC POWER UNITS

**— Mobile and Portable**



**IN TRUCKS**

**IN TRAILERS**



**AS PORTABLE  
UNITS**

The War Assets Administration has priced for *immediate sale* 25 KVA gasoline-powered AC Generators—120 volts, single phase, 60 cycles—

- in trucks
- in trailers
- as portable units

The mobile equipment is used but in good condition. Many separate units are unused, some are used but all are in good condition. They should be of particular interest to construction contractors and all users of electric power in the field.

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(\*depending on condition)

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Trucks and Trailers  
in Baltimore only.

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RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver  
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Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia  
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane  
Cincinnati • Fort Worth (Telephone 3-5381)

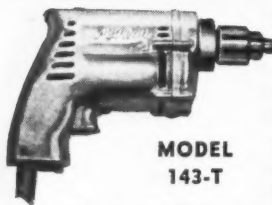
529



## SIMPLIFY DRILLING IN CLOSE QUARTERS

WITH A

*Mall Drill*



MODEL  
143-T

The compact design of the 1/4" Mall Drill makes it easy to handle in close quarters and cramped positions . . .

its perfect balance permits operation with either hand . . . and its light weight reduces the worker's fatigue.

Equally efficient on metal, wood or plastic, the Mall Drill is designed for constant duty. Its powerful high speed motor is cool running and will not stall in hand drilling. Special steel alloy gears, and extra long brushes make for long service. Commutator and brushes can be serviced without dismantling the drill.

The 1/4" Mall Drill comes in 2 speeds—Model 143T 2500 r.p.m.—Model 143TP 1800 r.p.m. Available for 110-volt AC-DC or 220-volt AC-DC.

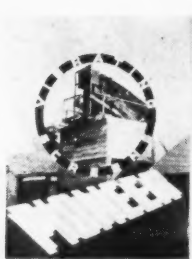
The 1/2" Mall Drill has free speed of 500 r.p.m., and is tailor-made for heavy duty drilling. It has a 1/2" capacity in metal and 1" capacity in wood. It is equipped with powerful, ballbearing, universal motor, steel alloy helical gears and the finest chucks. Its streamlined appearance designed for peak efficiency and service.

Ask your Distributor for Mall Drills, Mall Saws, Mall Concrete Vibrators, and Mall Chain Saws or write direct for literature and prices.

## MALL TOOL COMPANY

7757 South Chicago Avenue  
CHICAGO 19, ILLINOIS

★ 25 Years of  
"Better Tools For Better Work"



**VIBRATING SCREENS** — 16-p. bulletin) Presents complete line of balanced vibrating screens suitable for commercial or stationary operations in pit, mine and quarry industries. Details of construction, as well as specifications on types and sizes, are included.—Pioneer Engineering Works, 1515 Central Ave., Minneapolis 13, Minn.

**EARTH DRILLS**—(8 pp., illustrated) Describes and illustrates various styles and types of Buda earth drills, including rigid-head and cradle-head and truck-and platform-mounted models. Also shows typical on-the-job applications.—Buda Co., Harvey, Ill.

**MANOMETERS**—(8-p. bulletin) Describes complete line of fixed and portable manometers for use in water surveys and similar flow rate measurement. Also includes valuable engineering data. — Simplex Valve & Meter Co., 6735 Upland St., Philadelphia 42, Pa.

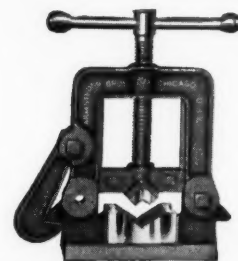
*Traffic Guard*  
The Practical,  
good-looking  
Beacon for  
Fixed  
Position

# EMBURY

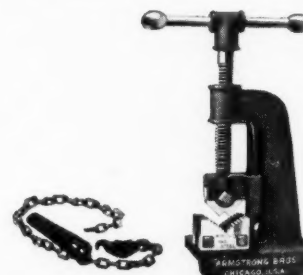
## WARNING LANTERNS

**LITTLE  
AIR PILOT**  
The General Purpose  
Warning Light

Order through Your Jobber  
**EMBURY MFG. CO., WARSAW, N. Y.**



"ARMSTRONG BROS." Hinged Pipe Vises are built for lifetime service with *unbreakable* drop forged steel hooks. Other design improvements include: oval handle ends (will not pinch hands), replaceable tool steel jaws with milled teeth, and on sizes 70 and 71, a solid 1-piece jaw that prevents kinking of small pipe. There are always extra quality features in an "ARMSTRONG BROS." Pipe Tool.



"ARMSTRONG BROS." Post Pipe Vises are of convenient open side type and easily mounted on bench truck, or with accompanying Chain Attachment, to any post, telephone pole or tree. They have the replaceable tool-steel jaws and the other ARMSTRONG quality design features.



"ARMSTRONG BROS." Chain Pipe Vises combine compactness, convenience and portability with large capacity range. They can go to the job in a tool bag; can be easily mounted on any post or bench. Patented 1-piece, solid center jaw prevents kinking of small or thin walled pipe or conduit. Jaws, base and handle are drop forged, the chain is proof tested.

## ARMSTRONG BROS. TOOL CO.

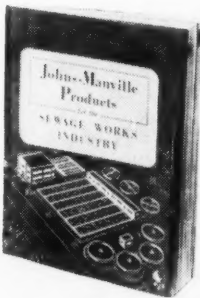
"The Tool Holder People"  
334 N. Francisco Ave.  
Chicago 12, Illinois

Eastern Whse. and Sales: 199  
Lafayette St., New York 12, N. Y.  
Pacific Coast Whse. and Sales Office:  
1275 Mission St., San Francisco 3,  
Calif.





**AIRPORT ELECTRICAL EQUIPMENT**—(56-p. booklet) Contains typical lighting plans and wiring diagrams for all classes of airports. Equipment listed is also keyed by symbols to wiring diagrams and lighting layouts in plan sections to assist airport engineers in meeting specific requirements for any type of airport operation. Distribution equipment described includes fuse cutouts, relays, regulators, transformers, panel boards and control panels. Section on lighting equipment covers beacons, floodlights, boundary and obstruction lights, contact lights, ceiling projectors, wind indicators and other units. —Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.



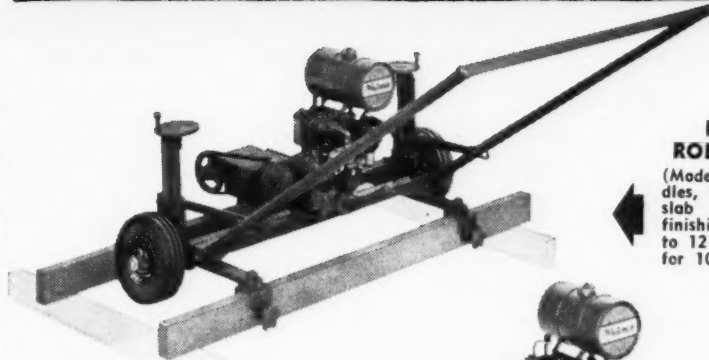
**SEWAGE WORKS INDUSTRY**—(2-part, 78-p. brochure) Part one contains more than 100 photographs of actual installations of asbestos products in sewage systems and treatment plants throughout country. Part two

is catalog with descriptions of illustrated products and further information about their use. Typical applications illustrated are insulation for digestors, boilers, steam and hot water lines, sludge incinerators and furnaces, packings for sewage and sludge pumps, Transite sewer pipe, and Transite sheets. A similar booklet covers "Products for the Water Works Industry". —Johns-Manville, Box 290, New York 16, N. Y.

**HARD SURFACING**—(16-p. technical bulletin) Covers use of Hardex electrodes in building up surfaces for resistance to shock and abrasion. Contains helpful information concerning effect of temperature and cooling rates on deposited metal, selection of proper grade of rod, and recommended welding techniques. —Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.

**VERTICAL DRILL** — (4-p. folder) Supplies information on Parmanco single-speed transmission drill, designed to meet requirements of general prospecting field where it is not necessary to drill in solid limestone. Recommended for 50 to 60 ft. with 4½-in. equipment, it can be used to greater depths under favorable conditions. — Paris Manufacturing Co., Paris, Ill.

## Machine Economy and Perfection for SMALL CONCRETE JOBS

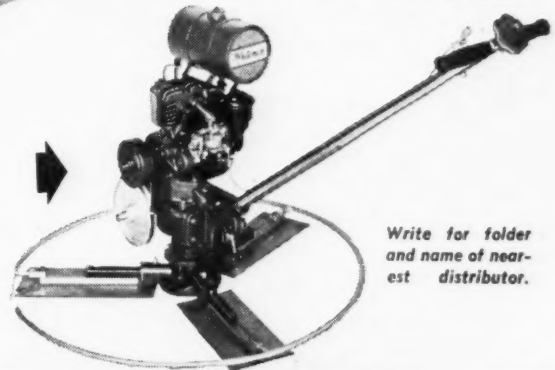


### LIGHTWEIGHT RODDING MACHINE

(Model "RS") screeds, puddles, vibrates and levels the slab . . . prepares it for finishing. For slab widths 3 to 12 ft. Also in Model 44 for 10 to 20 ft. widths.

### LIGHTWEIGHT FLOATING-FINISHING MACHINE (Model "J")

For level finishing . . . for either traction or smooth surfaces. Only 105 lbs., 35" diameter. Also in Model "B", 46" diameter.



Write for folder and name of nearest distributor.

**Whiteman CONCRETE EQUIPMENT**  
WHITEMAN MFG. CO.  
3249 Casitas Ave., Los Angeles 26, California

## SAVE MANPOWER!



Only a minimum of effort is required to haul materials in Sterling Wheelbarrows. Perfectly balanced construction puts 80% of the load on the wheel, thus easing the task of the operator and making it possible for him to haul more loads daily.

"I Carry  
20%  
of the load"

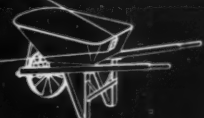
"I Carry  
80%  
of the load"

STERLING WHEELBARROW CO., MILWAUKEE, WIS.

**Sterling WHEELBARROWS**



Look for this Mark of  
STERLING Quality



## ONLY JAHN TRAILERS GIVE YOU ALL THESE FEATURES



- 1 Improved, fabricated goose-neck with its greater built-in strength.
- 2 Positive, equalized braking at each wheel regardless of position of axle.
- 3 Deep wide flange main beams run the full length of the trailer.
- 4 Worm gear type slack adjusters at each wheel.
- 5 Constant lift cam provides improved brake application.
- 6 Exclusive axle designs furnish ample oscillation for equal load distribution on all tires.

*get all the details from your nearest Jahn distributor*

# C. R. JAHN COMPANY

1335 WEST 37th PLACE  
CHICAGO 9, ILLINOIS



The Ferguson "112" Standard Heavy Duty Tamping Roller, illustrated above, is constructed to "fit the job." A rugged shaft and bearing design and a sturdy frame — mean less time lost and a minimum of maintenance. Positive cleaning action is assured in two ways: 1—Self cleaning feet, and 2—Specially

designed removable cleaners, set at an angle whereby they remove the dirt midway between the center of the roller and the ground. Empty, the roller exerts a pressure of 150 lbs. per sq. in.; filled with water, 242 lbs. per sq. in. Weight empty, 6,340 lbs. Weight loaded, 10,200 lbs. Write today for folder "C-112."

## SHOVEL SUPPLY COMPANY

4900 Hines Blvd. P. O. Box 1369 Dallas, Texas

**DIESEL ENGINES** — (12-p. catalog) Features line of "One-Sixty-One" series diesel engines for automotive, industrial and marine service. Illustrations show 1, 2, 3, 4, 6, and 8-cylinder models, ranging from 15 to 300 hp. Material includes pressure lubrication data, discussion of slow pressure combustion system, engine data table and other descriptive information relative to application of engines.—Buda Co., Harvey, Ill.

★ ★ ★

## Bulldozer Hoppers

(Continued from page 97)

layer of calcareous material over deep layers of clays and fine sand-clay mixtures. Depending on weather and drainage conditions, the groundwater table varies from the surface to 10 ft. below the surface.

Subgrade for the landing mat base was partly in cut and partly in fill. As far as possible, all fill was made with select topsoil material; but, because of the necessity of balancing earth movements and speeding construction, the completed subgrade was not entirely uniform and contained some poor local areas. All fill was built up in 8-in. layers, each layer being compacted with sheeps-foot tamping rollers and water being added as necessary by sprinkler trucks to obtain the optimum moisture content. Pneumatic-tired rollers were used for the final compaction.

Because of the subgrade conditions, a rigid-type pavement was regarded by the engineer officer in charge as being most desirable for the landing mat, and cement-treated base, matching flexible-type construction in cost, was provided for as much of the area as possible.

### Flexible Base

To speed completion of the mat it became necessary to supplement the rigid base with flexible base utilizing completely the entire available supply of all types of satisfactory material. Accordingly, an 8-in. flexible base was laid at the same time that the rigid base was under construction.

For the 8-in. flexible base, the  
(Continued on page 178)





## *For Great Diesel Power* —see what bus operators are doing

**L**ITERALLY thousands of GM Diesel-powered buses are on America's streets and highways. Many have traveled more than a million miles and are still going strong. They're pulling upgrade smoother, making better time and getting over 50% more miles per gallon, using low-cost fuel.

Because they're powerful and compact, these engines have made it possi-

ble for buses to take advantage of all the economy and dependability of Diesel power.

And they can bring these advantages to countless users of power who haven't been able to consider Diesel before.

*Whatever needs for power you may have in road-making machinery, cranes, shovels or any other construction material — look to GM Diesels.*



### **Features of GM Diesels Important to Every User of Power**

- QUICK TO START**—on their own fuel
- LOW COST**—run on common fuel oil
- EASY TO MAINTAIN**—clean design plus accessibility
- LESS FIRE HAZARD**—no volatile explosive fuel
- COMPACT**—readily adaptable to any installation
- SMOOTH OPERATION**—rotating and reciprocating forces completely balanced
- QUICK ACCELERATION**—2-cycle principle produces power with every downward piston stroke

### **DETROIT DIESEL ENGINE DIVISION**

DETROIT 23, MICH. • **SINGLE ENGINES... Up to 200 H.P.**  
**MULTIPLE UNITS... Up to 800 H.P.**  
**GENERAL MOTORS**

## FORD TRUCKS LAST LONGER!

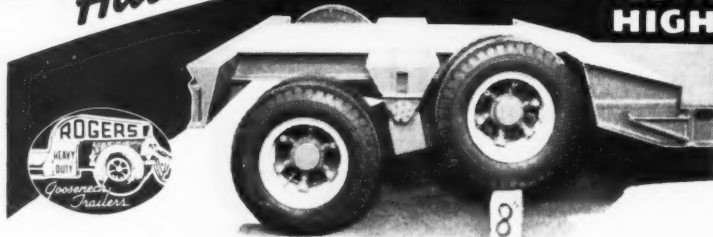


**78% of All Ford V-8  
Trucks Ever Sold Are  
Still in Use!**



## ROGERS WALKING BEAM TRAILERS

**Haul HEAVY PROFITABLE LOADS  
OVER  
RESTRICTED  
HIGHWAYS**



*Worm's eye view showing the "walking beams", widely spaced bearings and heavy frame construction.*

Adequate "rubber" capacity. Wheels that oscillate to distribute the load over all tires regardless of road irregularities. Both are essential to practical hauling of heavy machinery and equipment.

Both are accomplished in this large capacity Rogers Trailer, yet it is only 8 feet wide to conform to the requirements of some states.

Entirely satisfactory performance is accomplished by means of a "walking beam" such as you have seen on steam boats. If you use heavy duty trailers, write for the Rogers Catalog which illustrates and describes a type and size for every purpose.

**ROGERS BROTHERS CORPORATION**  
220 ORCHARD ST. • ALBION, PA.

**ROGERS TRAILERS**  
**EXPERIENCE builds 'em • PERFORMANCE sells 'em**

(Continued from page 176)

contractors first constructed a 4-in. foundation course of oyster shell stabilized with a 25-percent mixture of sandy topsoil. After these materials had been spread and mixed on the subgrade by blading with motor patrols, the mixture was compacted at optimum moisture content by pneumatic-tire and steel-wheel rollers. On top of the foundation course, the constructors placed a 4-in. top course of 2-in. pit-run road gravel (the same material used in the rigid-type cement-treated base). The pit-run material was spread and graded with self-propelled blade machines and was compacted with pneumatic-tire and steel-wheel rollers. Upon completion of the top course, the 8-in. flexible base was sealed with a prime coat of RC-2 cut-back asphalt which served also as a tack coat for the asphaltic concrete wearing surface applied later.

### Concrete Base

In a few places where subgrade was too soft to allow proper rolling of cement-treated base, the mat constructors substituted a base of portland cement concrete placed by truck-mixers and struck off with hand screeds. None of the rigid base, either cement-treated or concrete, contained load-transfer devices or any other type of steel reinforcement.

### Asphaltic Concrete Surface

All paved areas are designed for operation of mobile pneumatic-tired mooring masts to which the blimps are attached. The landing mat is circular, 2,000 ft. in dia., with four 500-ft.-dia. mooring-out circles around the edge of the mat. In addition, there are two 500-ft.-dia. outlying mooring-out circles, connected to the mat by a 60-ft. taxiway, plus 400-ft. and 60-ft. taxiways to a hangar and an 80x300-ft. parking area on the edge of the mat.

On all these paving areas, the constructors placed a wearing course of 1½ in. of cold-mixed asphaltic concrete. From the pug-mill asphalt mixing plant, the asphaltic concrete was hauled and distributed on the base by trucks which dumped their loads at equal intervals for spreading and screeding by blade maintainers. During the blading operations the mix was compacted with pneumatic-tire rollers and finally was rolled with 5-ton steel-wheel

(Continued on page 179)



(Continued from page 178)

tandem rollers. A field laboratory controlled the mix, which consisted of about 50 percent of  $\frac{7}{8}$ -in. crushed and graded road gravel, 40 percent sand, 5 percent limestone dust, and 5 percent MC-3 cut-back asphalt.

#### Load Tests on Base

Three load tests were made at representative locations on each type of base, using a 24-in.-dia. metal plate under a 50-ton hydraulic jack loaded with a 12-yd. Euclid truck. These tests indicated for the cement-treated rigid base a safe allowable wheel load of 50,000 lb. and for the stabilized flexible base an allowable wheel load of about 22,500 lb. In the latter case, because further stabilization of the speedily constructed base is expected to occur with age, it was recommended that the wheel load capacity be increased to 25,000 or 30,000 lb.

Tests of 6x5-in. cylinders of soil-cement base mixture at 28 days gave average compressive strengths equivalent to more than 2,500 psi. in standard 6x12-in. cylinders. In other words, the soil-cement base was equal in compressive strength to 2,500-lb. concrete.

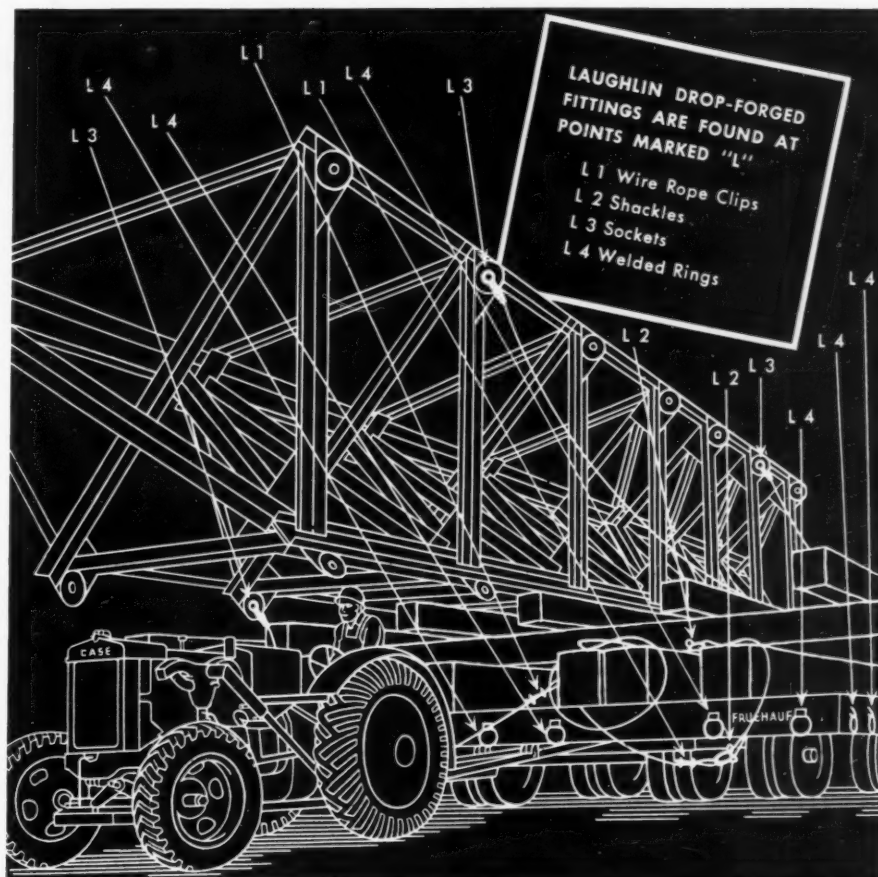
#### Surface Drainage

To take care of rainwater runoff, the landing mat is constructed with a dome-shaped crown, the pavement slope increasing from the center to a maximum of 0.43 percent of the edge. Beyond the pavement edge, grassed shoulders slope on a grade of about  $1\frac{1}{2}$  percent for 300 ft. to a peripheral swale-type ditch in which drop inlets on about 400-ft. spacing discharge into multiple lines of 36-in. concrete pipe, laid with cemented joints. The peripheral drainage lines comprise one to six 36-in. barrels.

#### Direction

All work connected with the construction of the Hitchcock (Tex.) Naval Air Station was directed at the site for the Bureau of Yards and Docks of the Navy Department by Lt. Comdr. Madison Nichols (CEC) USNR, officer in charge of construction. For the joint contractors, Norgaard & Shaw, Vilbig Bros., Inc., and Nathan Wohfeld, of Dallas, Tex., H. F. (Red) Ulrich was project manager, J. M. Nagle was assistant project manager in charge of engineering construction, and L. H. Gamache was general superintendent.

## FOR SAFER, LOWER-COST TRANSIT



For lashing structures in transit, for construction machinery or in hoisting, Laughlin wire rope and chain fittings combine maximum safety with smoother, more economical handling:

**By avoiding accidents.** Laughlin fittings, such as "Fist-Grip" Safety Clips, "Missing Links" and Safety Hooks, give you more safety features than any other line.

**By reducing purchase price.** You'll find that fittings for practically every purpose are *standard* with Laughlin. No delay or extra expense in ordering.

**By giving more economical service.** Laughlin fittings are *drop-forged* ... last longer. And 3 Laughlin "Fist-Grip" Clips do the work of 4 ordinary U-bolts.

Wherever you use wire rope or chain, Laughlin quality fittings will bring you many advantages worth knowing about fully. For a complete catalog write to Dept. 1, THE THOMAS LAUGHLIN COMPANY, Portland 6, Maine. Laughlin fittings are distributed through mill, mine and oil field supply houses.

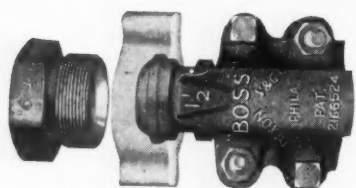
# LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



# These Couplings Are Washerless, Leakproof, Safe!

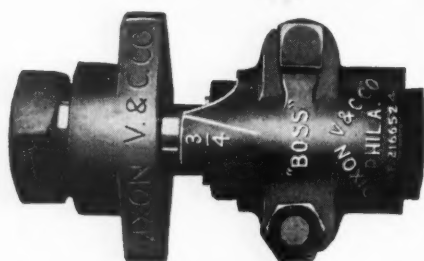
In both of the couplings described below, ground joint construction provides a soft-to-hard metal seal between stem and spud that is washerless, leakproof, trouble-free. Correct design and superior strength eliminate all possibility of blow-offs.



**"G J-BOSS"**  
**GROUND JOINT, STYLE X-34**  
**FEMALE HOSE COUPLING**

For all high or low pressure steam, air, water and hydraulic hose. Copper insert in spud fits tight against rounded head of stem to form washerless, leakproof seal. "Boss" Offset and Interlocking Clamps anchor coupling to hose with powerful, all-round grip, without pinching. Sizes, 1/2" to 4", inclusive.

NOTE: For washer type couplings of otherwise identical design, specify "Boss" Washer Type Female Coupling, Style W-16.



**"G J-BOSS" Ground Joint**  
**AIR HAMMER COUPLING**

Incorporating the same washerless, leakproof construction as the Style X-34 coupling described above. No washers to wear out or be replaced. Furnished with strong, tight-gripping "Boss" Interlocking Clamp—no danger of blow-offs. Compact Type, Style XLB-61, 1/2" and 3/4". Heavy Type, Style XHB, 3/4" and 1".

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

IF IT'S A  PRODUCT  
IT'S DEPENDABLE

**DIXON**  
VALVE & COUPLING CO.  
Main Office and Factory: PHILADELPHIA, PA.  
BRANCHES: CHICAGO, BIRMINGHAM, LOS ANGELES, HOUSTON

## DAVIS DAM HOUSING

(Continued from page 91)

a store and a mess hall. The living units will include 50 single-family dwellings, 7 apartment buildings for five families each, 50 war surplus house trailers, and 10 Army surplus barracks.

### One-Family Units

The single-family dwelling units are built on concrete block foundations and are of wood frame construction. Exterior sheathing consists of Celosiding (made by the Celotex Corp.). This is a wallboard impregnated on both sides with tar to make it waterproof and coated on the outside with sand for a better appearance and to provide wearing qualities. Inside partitions are of plywood. The roof is covered with a heavy grade of composition roofing which is a form of rubberoid. Each house has four rooms (two bedrooms) and will be furnished with a hot water heater and a desert cooler. All other furniture will be provided by the tenants.

The ten barracks (nine for male personnel and one for female personnel) are old 63-man barrack buildings purchased as Army surplus at Camp Willeston, Boulder City, Nev. They were cut into four sections, each 20x30 ft. in plan and some 24 ft. high, trucked about 102 mi. and reassembled at the damsite, after which partitions, new stairways, and washrooms were installed.

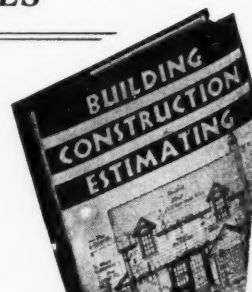
### Water Supply

To provide a water supply for this small city, the Utah company has installed a 200,000-gal. redwood stave tank on a hill overlooking the town. Colorado River water for domestic use will be chlorinated and softened. The pressure on the system will be 65 psi. which is adequate for fire protection. No building will be more than 250 ft. from a fire hydrant.

H. E. Williams is project manager for Utah Construction Co., T. L. Terry is general superintendent in charge of all construction, and E. G. Johnson is in charge of all building work.

## How to make sound, accurate building construction ESTIMATES

A  
complete  
how-to-do  
course  
on the  
estimator's  
job



HERE is a practical new book dealing specifically with the specialized job of the building construction estimator. This book gives a clear picture of contracting as a business, and presents all the material the estimator needs on materials, methods, building codes, specifications and contracts. Covers in full detail the everyday work of the estimator in drawing up complete, accurate, workable estimates on every phase of building construction.

## BUILDING CONSTRUCTION ESTIMATING

By George H. Cooper

In Charge of the Estimating Classes at  
Mechanics Institute, New York City

282 pages, 5 3/4 x 8 3/4, 161 illus., \$3.00

This book gives you a thorough, practical course in estimating—all the required material, without cumbersome detail, organized into a complete, orderly working plan for home study—written by a man with wide experience both as an estimator and as an instructor in estimating classes.

Includes: two complete sets of plans and specifications—one for a home, and one for a bank building—hundreds of specimen estimates, many sketches and diagrams, helpful questions and exercises following each chapter, and much essential reference data such as charts of symbols used on plans. Quotes many unit costs to make work more realistic.

Outlines the many administrative and technical skills involved in constructing a building, showing the relationship between the contractor, architect and the owner, and giving specific details on plans, specifications, contracts and estimating costs.

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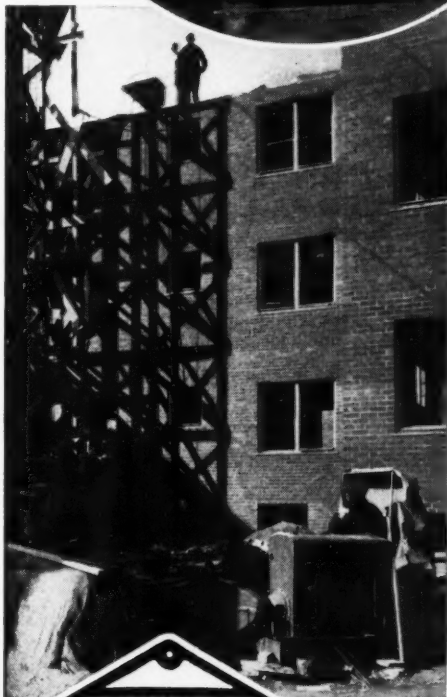
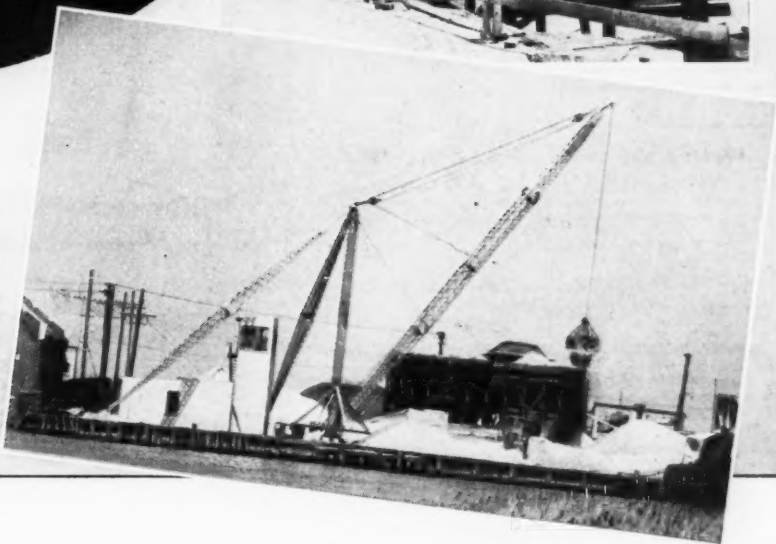
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Send me Cooper's Building Construction Estimating for 10 days examination on approval. In 10 days I will send \$3.00, plus few cents postage, or return book postpaid. (Postage paid on cash orders.)

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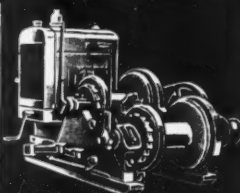
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### SEARCHLIGHT SECTION

Additional Searchlight ad on opposite page

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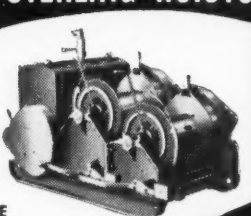
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supplements other advertising in this issue with these additional announcements of products and services essential to efficient and economical operation in the process industries. Make a habit of checking this page, each issue.

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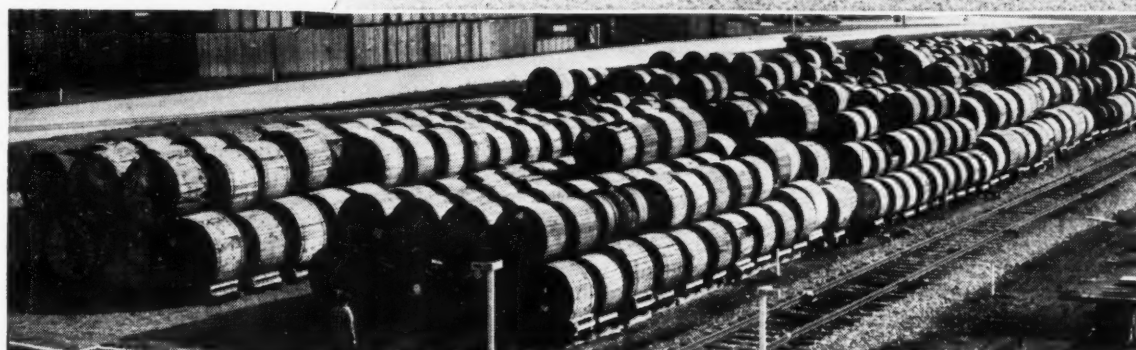
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Some of the types and sizes are standard and conform to underwriters' code. Others, while non-standard, are adaptable to a wide variety of uses.

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319-2

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See ad on 4th Cover for list of  
equipment in each line

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Ill., Chicago, Chicago Construction Equipment Co.  
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Mass., Allston, Boston, Clark-Wilcox Co.  
Mich., Muskegon, Lakeshore Machy. & Supply Co.  
Minn., Minneapolis, Philippi-Murphy Equip. Co.  
Miss., Jackson, Jackson Road Equip. Co.  
Mo., Clayton, The Howard Corporation  
Montana, Billings, Interstate Truck & Equip. Co.  
Helena, Caird Eng. Works  
N. M., Albuquerque, Bud Fisher Co.  
N. M., Roswell, Smith Machy Co.  
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N. Y., Olean, Freeborn Equip. Co.  
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O., Cincinnati, Carroll-Edwards Co.  
Okla., Oklahoma City, Townsco Equip. Company  
Ore., Portland, Andrews Equip. Service  
S. C., Columbia, Smith Equipment Company  
Tenn., Knoxville, Dempster Bros., Inc.  
Tenn., Nashville, Dempster Bros., Inc.  
Tex., Amarillo, T. W. Carpenter Equip. Co.  
Texas, Dallas, Shaw Equip. Co.  
Tex., Houston, Contractors Equip. Sales & Service  
Corp.  
Tex., San Antonio, Patten Machy. Co.  
Utah, Salt Lake City, J. K. Wheeler Mach. Co.  
Vt., Barre, A. M. Flanders, Inc.  
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Wisc., Milwaukee, Drott Tractor Co. Inc.

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Md., Baltimore, Stuart M. Christhill & Company  
Mich., Detroit, T. G. Abrams  
Mo., Kansas City, Brown-Strauss Corp.  
Neb., Lincoln, Highway Equip. & Supply Co.  
N. J., Newark, Johnson & Dealman  
O., Cleveland, H. B. Fuller Equip. Company  
Pa., Philadelphia, Giles & Ransome  
Wilkesburg, Arrow Supply Company

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Md., Baltimore, D. C. Elphinstone, Inc.  
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Flint, Grandsen-Hall & Company  
Mo., Kansas City, Mach. & Supplies Co.  
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N. Y., Buffalo, Dow & Co., Inc.  
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Toledo, The Kilcorse Mach. Co.  
Pa., Allentown, H. N. Crowder, Jr., Inc.  
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Oil City, Freeborn Equipment Company  
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### Buy Blue Brutes

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction  
Equipment Division

Holyoke, Massachusetts

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*Solid  
Shank  
Shovels*

FEATHERWEIGHT

## PERFECT BALANCE

A new redesigned  
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Shovel the perfect  
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shovel has.

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**"GEE! WHY DIDN'T I THINK OF THAT?"**

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MORE RELIABLE  
METHOD FOR  
MAKING WIRE  
ROPE ENDINGS.....**

..... This vastly improved method makes the old, hand-tuck splicing obsolete and unnecessary. The ACCO-LOC Safety Splice is neat, compact, flexible to the terminal. It always develops 100% rope strength. Can be used with any standard fitting. Send for literature.

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AMERICAN CHAIN & CABLE**

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You can give this Blue Brute 315' Compressor the toughest jobs on your books and it won't cry for help until you've got your money out of it many times over.

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\*Reg. U. S. Pat. Off.

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Teamed up with those versatile Worthington Wagon Drills (that make holes in any direction and at any angle) or other Blue Brute Air Tools, your Blue Brute Compressor will supply *more air* per gallon of fuel — and will stay trouble-free no matter how tough the going.

Make a date with your near-by Worthington distributor so that he can give you the rest of the facts that prove *there's more worth in Worthington.*

H6-4

## KNOW YOUR **BLUE BRUTES**

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis. His name is listed on page 184. Blue Brutes include:

### **RANSOME EQUIPMENT**

Pavers, Concrete Spreaders and Finishers\*, Portable and Stationary Mixers, Pneumatic Placing Equipment, Truck Mixers, Plaster and Bituminous Mixers and accessories.

### **WORTHINGTON EQUIPMENT**

Gasoline and Diesel driven Portable Compressors, Rock Drills, Air Tools, Contractors' Pumps\* and accessories.

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# BUY BLUE BRUTES



Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have

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## WORTHINGTON



Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division  
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